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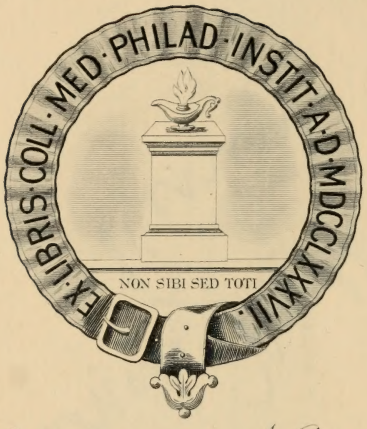

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Presented by

H. A. Hare, M.D.

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Vol. VII. JUNE, 1897. No. 1.

THE NATIONAL MEDICAL REVIEW

Chas. H. Stowell, M.D.
Editor and Publisher.

APR 25 1899

Washington, D.C.

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EXALGINE is a drug for relieving pain. It is not a narcotic, nor does it possess antipyretic properties except in very large doses. It acts primarily on the nervous system.

EXALGINE obviates, and does not merely stifle, pain; it does not give rise to any collateral inconveniences.

EXALGINE is indicated wherever pain is present. In facial, dental and sciatic neuralgia Exalgine acts promptly and gives rapid relief. In dysmenorrhœa, and all forms of ovarian pain, one or two doses of Exalgine invariably brings about cessation of pain.

EXALGINE is supplied in crystalline form, and in solution in the form of *Cordial Exalginique*, a palatable and elegant preparation. The usual dose is 2 grains every one or two hours.

Cordial Exalginique . . .

This cordial is an elegant and very palatable preparation of Exalgine. If contains 5 grains of Exalgine in every ounce of cordial. . . . . .

Cordial Exalginique

can be administered in any case where Exalgine is indicated. Owing to the fact that the Exalgine is in solution its action is rather more speedy than that of pills or tablets.

Cordial Exalginique

has been found invaluable in all forms of neuralgic pain, in headache, dysmenorrhœa, ovarian pains and in many cases of sciatica and rheumatism. When given in proper doses Exalgine has no antipyretic action. It is a pure analgesic.

Cordial Exalginique

has also been used with success in melancholia, epilepsy, chorea and in many infantile disorders. It is very pleasant to take and speedy in action.

THE DOSE FOR AN ADULT IS ONE TABLESPOONFUL EVERY ONE, TWO OR THREE HOURS ACCORDING TO THE SEVERITY OF THE ATTACK.

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THE
NATIONAL MEDICAL REVIEW.

VOL. VII. WASHINGTON, D. C., JUNE, 1897. No. 1

CHAS. H. STOWELL, M. D. EDITOR.

THE EDITOR'S TABLE.

To Escape Disease Germs.

Now that we know, or think we know, that so many diseases are caused by germs, it would indeed seem quite a simple matter to prevent all these afflictions simply by escaping their cause. This is especially true of such a disease as typhoid fever. When it is believed that this disease is caused by impure drinking water and when we know that a proper kind of filter or boiling will remove or destroy these germs, it would seem a simply matter to prevent the disease. But at the recent meeting of the Association of American Physicians held in this city, Dr. W. T. Councilman of Boston, declared that the typhoid bacillus was frequently found in the gall bladder. Indeed, he put the case stronger than this and said that this bacillus was almost always present. It is always present in the liver, or there are so few exceptions that it may be said that it is practically always present. From the liver the bacilli could easily pass into the bile vessels. We have been taught of the great antiseptic properties of the bile, but it appears from what Dr. Councilman says that the typhoid bacilli find this a good medium in which to thrive. It is not a comforting thought to feel that we are going about with this amount of dynamite in our gall bladder, and it also inclines one to doubt the efficacy of the so-called antiseptic treatment of typhoid fever. If we are breathing tubercle bacilli about eighteen or twenty times a minute, if we are surrounded with the parasites of Lavaran, and if we have ever abiding with us the typhoid bacilli, will someone tell us how we are to escape? We are a strong believer in the germ theory of disease and yet we are not prepared to stand a good quiz on a few questions which even the most earnest bacteriologists have not satisfactorily answered for us. For instance, will someone explain to us why competent pathologists of long experience fail to find the tubercle bacilli in the sputa of the living, while soon after they find abundant evidences of advanced phthisis in the lungs of the dead? Why is it that, according to a recent competent investigator, in twenty-five per cent of the cases of ordinary nasal catarrh, the secretions show the presence of the diphtheria bacillus? Why is it that the pneumococcus is said to be present in the mouths of a large number of persons who show no signs of pneumonia? Last of all, why is it that from the throats of a number of perfectly healthy children cultures can be made of

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the Klebs-Lœffler bacillus? But it is easy to ask questions.

That Medicine Shelf.

On a visit to a department store in this city, a lady discovered that six bottles of an iron tonic were offered for $3.00, although the regular price was twice that. She quickly availed herself of this great privilege and joyously brought to her home good health and long life all tightly corked. She immediately began to take the medicine, but discarded it after having used about one third of a bottle. The five unopened bottles were contributed to the medical shelf, all but ready to break under its heavy load. This lady informed us that she probably had at least two bushels of medicines, safely stored away. We have often wondered whether these people were not our best customers after all and largely because of their habit of taking medicine. They eat heartily of the most indigestible kinds of food, take a good nap after a heavy dinner, rise late, exercise little, and take freely of all kinds of medicine which promises relief from their self-poisoning. If people would cease taking medicine, not prescribed for them by physicians, and would be a little more attentive to the common laws of hygiene, they would enjoy an unusual degree of health, from which we would be the only ones to suffer. We doubt if there is hardly a home in this city where cannot be found some bottles of sarsaparilla, nervine or tonic. The habit of taking medicine is one of the great characteristics of the American people.

The Diphtheria Antitoxin.

In previous numbers of this journal we have had something to say about the statistics from the use of diphtheria antitoxin. It is a fact that the statistics are not all in favor of the use of this new treatment. There are so many figures on the opposite side that a strong argument could be advanced against the use of antitoxin. Indeed the report recently made to the American Pediatric Society cannot be said to be altogether satisfactory, and must have been disappointing to a large number. What is to be done in such a case as this? Be guided by the experience of men in every way competent to judge and in whose opinion you have confidence. Of what use are statistics if a surgeon tells us that if you will follow his methods he will guarantee the result will be precisely opposite that which the figures show? Converse with half a dozen good physicians on the diphtheria antitoxin question and you will be convinced there is something about this treatment that gives unusually favorable results. Then, when you have a case of your own, try the remedy. A little personal experience here is worth more than these confusing tables which come from hospitals, or poor sections of large cities. A physician recently remarked to us that no matter what the statistics might show, no one could use diphtheria antitoxin in a few cases without being thoroughly convinced of its wonderful power over this terrible disease.

Doctors for Fifty Cents a Month.

We have heard of nearly all kinds of doctors since we entered the ranks of the profession but it remains for Dr. Emory Lanphear, the editor of the *American Journal of Surgery and Gynecology*, to tell us of an entirely new species. We refer to the "fifty cents a month doctor". Dr. Lanphear has done a good service to the profession in exposing the methods of some of the "ticket associations" of St. Louis, by which, for fifty cents a month, members will receive "attention, examination, prescriptions and medicine, from physicians of wide experience and in case a member is confined to his bed a physician will visit at his house, giving

medicine, etc., all without any extra cost." We refrain from giving the names of these fifty cent physicians; but it is sufficient to say that some of them have been liberal contributors to current medical literature and they are often quoted as authorities in their special branches. When one of them was asked by letter if it was true he was connected with such a humiliating affair, the reply came that he was "too ill to reply to the questions asked". We have had occasion to remark before that St. Louis is a great city for surprises, but she has certainly outdone herself this time.

Not Much Confidence in Us.

Some of our exchanges do not appear to have much confidence that the physicians of this city are in earnest in their efforts to break up the dispensary evil. The idea seems to be that these great waves of reform have to pass along about once every so often but they are usually followed by a great calm. In commenting on the resolutions adopted by the Medical Association of this city, the *New York Polyclinic* says, "They are forcible, very much to the point and are formed on the proper lines to assure the greatest good to the greatest number"? but it adds: "Will they be lived up to? Not a bit of it! No more than will the iron-bound contract recently entered into by the physicians of Santa Clara County, California. There will always be backsliders, or importations will be made from other districts, and when once the barriers have been broken there will be a mad rush by all for the spoils. This is undoubtedly taking a pessimistic view of the condition of affairs, and places the members of the profession, as a whole, in an unfavorable light, but history will repeat itself, and we have already had sufficient evidence that what has happened in the past will happen again. There are too many enemies in camp at present to allow of a roseate hue being given to the future of medical reform."

A Consulting Therapeutist.

The well-known house of Parke, Davis and Company is certainly to be congratulated upon having secured the services of Dr. Hobart A. Hare, so long known to the profession as an accomplished writer, a successful editor and a most thorough teacher. All questions relating to the practical value of new and old remedies and to the relative merit of various preparations will be referred to him for an opinion. Again this firm demonstrates its purpose to keep in close touch with the profession and be ever ready to supply their various needs.

To Kill Patent Medicines.

The Maryland Medical Journal says that the sale of patent medicines would be promptly killed if the proprietors were compelled to make known the nature of the ingredients of their preparations. And just here we beg leave to differ with our neighbor. When a boy we were brought up on Ayer's Pills. Suppose that on each page of the old almanac the formula for these pills had been given. How much wiser would our parents have been? The pills would have been administer all the same. Doubtless some so-called patent medicines would be thrown aside, but not all. We could mention a dozen of these proprietary articles which certainly accomplish a good per cent of what they are advertised to do. So long as this is true we do not believe the public cares a nickel what the ingredients are. Our neighbor says that it is the secrecy in these compositions that proves so attractive to the people. On the other hand we believe it is because these preparations give relief. There is not a particle more secrecy about them than there is about a physician's prescription. A friend or mem-

ber of the family takes the paper to the druggist and returns with a bottle of medicine. In the great majority of cases the patient has not the slightest idea in the world what he is taking. He swallows the dose and trusts entirely to his physician. There is no use in our trying to make so much sport about proprietary medicines and telling how easily they could be pushed out of the market, so long as said remedies continue to relieve some and cure others.

Value of Change of Diet.

The author of Pediatrics says that the remedial value of diet rests largely in the sudden and complete change of the food. There should be a complete reversal in the mode of feeding. If a patient has been living upon milk and the farinaceous foods, then a change to broths, fish and flesh will often give the happiest results. He recites cases of chronic bronchial catarrh, rheumatic attacks, convulsions in children, dyspepsia, etc., which have been greatly relieved or entirely prevented by this complete change in diet. Two cases have recently come under our observation which are in accord with these views.

A confirmed dyspeptic was afflicted with insomnia to a most distressing degree. One evening just before retiring, out of sheer desperation, she ate a banana. This was followed by a good night's rest, and to our knowledge the practice of eating a banana just before retiring has been followed for some weeks, with no other result than insuring a good night's rest. The other case was an obstinate diarrhœa which had withstood the efforts of the physician for some weeks. The patient declared that he would then treat himself. He assured us that for three days he ate nothing but crackers and cheese, with the result that he was completely cured. These are doubtless extreme cases, yet they are in the same line of those given us by the editor of Pediatrics. Without doubt this change in diet should be for a short period in order to be of therapeutic value, however the whole of its value may be due entirely to nothing but the change.

Washington a Medical Center.

This city is certainly becoming a great center for conventions and meetings of all kinds. During the past month a number of medical associations have held their annual meeting here and as usual they all declared this to be the best place in the United States for holding their sessions. Upon every hand we heard words of hearty congratulation for the highly successful manner in which the Chairman of the Executive Committee, Dr. S. S. Adams, had performed his work. If anybody on this terrestrial sphere knows how to have everything in shape for a gathering of medical men, that same individual is the genial and obliging Secretary of the Medical Society of this city.

Koch's New Consumption Cure.

Dr. Koch has been working most faithfully ever since his first gigantic failure with his tuberculin, to produce a more reliable product and thus restore to himself something of the reputation which he had prior to his disastrous adventure. From some of our exchanges we learn that this new tuberculin is entitled to at least a certain degree of credit. From other journals, however, we learn that Koch would not give his tuberculin to anyone for a test until he had a sufficient supply to meet all the commercial demands sure to be made upon him. The right of sale of his tuberculin, we are told, has been given to one house and thus there is carried with this new discovery, the idea that it is another great money making scheme. Koch, however, must be regarded as a man of the

highest scientific attainments and we can but hope the further reports will be more favorable.

Contradictory Again. A writer in the *American Medico Surgical Bulletin* says that the saliva has marked bacteria killing properties. If, for any reason the secretion of the saliva should be suspended, then the mucous of the buccal cavity has this same bacterial killing property. How does the author reconcile this with the statement frequently seen in journals that in quite a per cent of the mouths of children are found the Klebs-Lœffler bacilli, while frequently there is found in the mouths of adults the pneumococcus?

The Way to Take a Pill. *The American Druggist* says: "It is said that an easy way to take a pill is to place it under the tongue and take a swallow of water, while thinking of something else. The first time this plan is tried the patient is apt to look about for something he has lost, being under the impression that he has dropped the pill on the floor."

Is not this too active a cathartic for safety, to "drop the pill on the floor" this early?

From a report of the cattle commission of Massachusetts for 1896, we learn that over 5,000 cattle were condemned for tuberculosis. For these cattle the state paid $173,206.

Dr. L. Emmet Holt is reported as having said that what the profession desired was not an antitoxin which could be furnished at a low price, but rather one which was absolutely reliable.

Pediatrics says that euchinin is a substitute for quinine, having all the curative properties of the latter, without any of its disagreeable after effects. More than this, the drug is absolutely tasteless and thus can be easily administered to children.

"What are you doing?" Dr. Holmes once asked a student in the dissecting-room. "Ligating arteries, sir." "Why not say tie?" rejoined the doctor; "I find that country practitioners ligate arteries, and that surgeon tie them."

Dr. Thomas Dwight, who, in the January *Scribner's*, tells this incident, adds, "The best of this anecdote is that the unappreciative student spread it as a joke against Dr. Holmes."—*Youth's Companion.*

THERAPEUTIC NOTES.

A Rapidly Beating Heart. Dr. C. H. Brockway of Worcester, Mass., reports the case of a lady who had a very rapidly beating heart for which he prescribed Cactina Pillets. This steadied the heart, relieved nervous anxiety and did much general good.

Dangerous Imitations. The Vin Mariani people are sending to the profession a warning against the use of dangerous coca wines. It is sufficient to say of the Mariani wine that the proprietors have on file more than 8,000 endorsements from leading practitioners.

For Bright's Disease. Dr. H. Green of Shell, Ala., reports the use of Sanmetto in Bright's Disease. He generally uses it alone, but at times combines it with digitalis. He finds it the best treatment for this affection with which he is acquainted.

For Mental and Nervous Diseases. We would call the attention of our readers to Conrad's Sanitarium for the treatment of mental and nervous affections. It is situated within a few miles of this city and is a private institution where patients are given the best personal attention.

To Reduce Fever. Dr. George F. Taylor of Baltimore, writes to the *Medical Sentinel* that he regards Phenacetine as a perfectly safe and reliable remedy for the reduction of high temperature. He has used it continuously for nearly eight years and it has become one of the few drugs upon which he places full reliance.

Difficult to Cure. A case is recently reported where mercurial and sulphur ointments were unsuccessfully tried for acne. Pineoline was then tried and with most gratifying results. When we consider the difficulty generally experienced in relieving this annoying affection we may regard this certainly as a great victory for Pineoline.

A Good Night's Rest. Dr. C. E. Quetil of Philadelphia, says he has personally used a teaspoonful of Bromidia after having successively lost several night's rest. He had a refreshing sleep, with no bad after effects. When a doctor experiences such personal benefit he generally knows thereafter what to prescribe in similar cases.

Treatment for Chlorosis. A recent article in one of our exchanges sets forth the results from the use of Gude's Pepto Mangan. In this affection the author says the object is to infuse oxygen, iron and manganese into the blood to produce red corpuscles. He finds that this result is almost invariably brought about in all cases of blood poverty.

To Stir up the Liver. Dr. J. C. Bantla of Abrams, Wis., says that Peacock's Chionia is the very best preparation to be used in hepatic torpor. In one case where the older remedies had been long tried in vain, this new preparation placed the patient on her feet again in four weeks, and best of all apparently made a permanent cure.

Blood Builders. For blood-builders and blood-makers Mercauro and Arsenauro are becoming recognized everywhere as in the very front rank. The old method was to give iron, iron, iron, until the patient thought he might as well eat an iron poker and be done with it. Now a few drops of this pleasant preparation will do the whole business.

A Valuable Food. A Vermont physician writes to the Imperial Granum Co., to the effect that he now has a tough and strong boy of fourteen months who was made so by the use of this food, after many experiments upon other foods.

Just After the Grippe. The extreme and indescribable weakness and prostration following the grippe are best cured with such a revivifying and vitalizing agent as the McArthur Hypophosphites. The nutrition of the tissues is renewed and the true vitality of the nerve structure restored.

Just the Right Time. This is just the right time for you to think about Horsford's Acid Phosphate. It not only makes a most refreshing and cooling drink, but it is also a good nerve tonic. Add a half teaspoonful to a glass of sweetened water and drink just before retiring. Or try it as a tonic when you come in feeling exhausted and overworked.

A New Analgesic. Prof. T. A. Fraser of the Edinburgh Royal Infirmary says that he has prescribed Exalgine in pain produced by a number of diseases, with the happiest results. He gives a long table, showing the character of the diseases treated and concludes that Exalgine must now take an important place among the remedies by which pain is reduced.

What will it do? We are in receipt of a report on Ergotole by Dr. W. H. Morse, the author of New Therapeutical Agents. He gives six conclusions as a result of many experiments. Probably the most important one is that "it is non-irritant", even when employed hyperdermically. This we can personally verify after having used it in a number of cases.

In cases of Phthisis. Not all patients with phthisis can take cod liver oil in any form. It is then that Gray's Glycerine Tonic shows its power to increase the weight and strength. It is pleasant to the taste and will not disturb the most delicate stomach. For all catarrhal conditions of the respiratory system it is an alterative and a tonic of the highest value.

FOR THE WORST CASES. Mr. Tyree does not ask you to try his Antiseptic Powder in ordinary cases as a test, but asks you to try it in your very worst cases, knowing that you will not be disappointed in the results.

A STANDARD ANTISEPTIC. At the beginning of hot weather it is well to remember that Listerine is the standard antiseptic. There are a hundred uses to which it may be put to advantage, while it is one of the most pleasant and effective antiseptics to have about the office. One should not forget about Lambert's Lithiated Hydrangea as a renal alterative and anti-lithic agent.

THE NEXT BEST. One firm at least holds that mother's milk is the very best food for infants. The "next best" food is the one they place before the profession, viz: Just's Food. Mother's milk first, Just's Food second, is the way they put it. A new and very unique pamphlet touching these points will be sent to any address simply upon a request to the home office, Syracuse, N. Y.

ALWAYS ON TOP. Possibly the Antikamnia people could have deceived the profession for a year or two by their unique literature. But it is absolutely certain they could not have kept it up for all these years. They would have been "caught at it" were it not for the fact that their product has the genuine merit in it which has given it the foremost place in the new materia medica. As a recent writer puts it, "Everybody prescribes it."

TO NEBULIZE. We have been familiar with the Globe Nebulizer ever since its first appearance and we can hardly speak too highly of it. It is not only a convenient piece of apparatus for office work, but it is also a very successful instrument for home use. For inflating the middle ear there is nothing superior to it. The old Politzer bag would be thrown out of the window after a single trial of this instrument. We give it our hearty endorsement.

SEEING IS BELIEVING. The advertisements of the Buffalo Lithia Water which have been in the medical journals of late make very interesting reading at least. There is no getting around such facts as are here presented. You must both shut your eyes and close your ears to what is going on about you if you do not want to be convinced. The Buffalo Lithia Water does the business and the disbeliever or doubter is the one who is without experience. Col. Goode has been a liberal patron of medical journals to be sure; but the compliment of this is that the medical profession has been most liberal patrons of Col. Goode, for it would indeed be an exception to find a well-posted medical man who could not give some testimony relative to the merits of this well-known lithia water.

BOOK REVIEWS.

A HANDBOOK OF MEDICAL CLIMATOLOGY. By S. Edwin Solly, M. D., late President of the American Climatological Association. 470 pages, with engravings and colored plates. Cloth, $4.00. Lea Bros. & Co., publishers, Philadelphia and New York. 1897.

We have altogether too little literature on the subject of climatology. Our practice has rather been to try all kinds of drugs and after these have failed, as a last resort, to order a change of climate. In the volume before us we have ample directions for choosing a climate specially adapted to particular cases. The author claims that he is now able to reduce his observations to a scientific basis and to draw therefrom laws affording trustworthy conclusions of practical applicability. The question of the climatic treatment of phthisis is thoroughly discussed and a number of forms of diseases are given which could be influenced by climate. We have many new facts here and this volume must be regarded as a valuable contribution to a subject altogether too little understood.

DISEASES OF THE EAR, NOSE AND THROAT and their Accessory Cavities. By Seth Scott Bishop, M. D., L. L. D., Professor in the Chicago Post-Graduate Medical School and Hospital. Illustrated with 100 colored lithographs and 168 additional illustrations. Pages 496. Extra cloth, $4.00, net; sheep or half-Russia, $5.00, net. The F. A. Davis Co., publishers, Philadelphia, New York and Chicago.

This is a clearly written volume and is well illustrated. The author says he had in mind in writing it to help students, to aid practitioners who cannot send their patients to specialists, and as a guide for those physicians who are gradually taking up this special line of work. As it does not pretend to be an exhaustive treatise, so we have condensed in these pages a great deal of practical matter devoted largely to diagnosis and treatment. The author certainly has abundant opportunity to test various methods of treatment and the conclusions here reached can be relied upon as the result of practical application.

THE DISEASES OF THE STOMACH. By Dr. C. A. Ewald, extraordinary Professor of Medicine at the University of Berlin, Director of the Augusta Hospital, etc. Translated and edited, with numerous additions from the third German edition by Morris Manges, A. M., M. D., Lecturer on general Medicine at the New York Polyclinic. Second revised edition. 602 pages. Price, $5.00. Illustrated. D. Appleton & Co., New York. 1897.

The author of this volume is well-known to the medical profession as one of the best authorities on the diseases of the stomach. The original German edition has been translated into a number of languages and is already a text-book in nearly all our colleges. The author says that notwithstanding the use of the stomach tube (!) we are not yet able to perform miracles in the treatment of stomach diseases. Probably there is no volume in the English language which so thoroughly treats of the diseases of the stomach as this one of Prof. Ewald.

THE INTERNATIONAL MEDICAL ANNUAL. 1897. Fifteenth year. E. B. Treat, New York and Chicago. Price, $2.75. Pages 720.

This work of reference for medical practitioners is probably known to nearly all our readers. It is well called, "A Practioners Index". The new methods of treating disease, new remedies and new surgical appliances and operations are all here recorded with references where the original articles may be found. In other words if one wishes to know the very latest he has here a volume which will supply precisely what he desires.

CLINICAL LESSONS ON NERVOUS DISEASES. By S. Weir Mitchell, M. D., member of the National Academy of Science, etc. Lea Bros. & Co., Philadelphia and New York. 1897. Pages 300. Price $2.50.

This little volume is a collection of clinical lessons on nervous diseases, given by this well-known editor and writer. Dr. Mitchell has long been known as a writer who presents his subjects in the clearest manner possible. The present volume forms no exception to this rule.

A MANUAL OF THE PRACTICE OF MEDICINE Prepared especially for Students by A. A. Stevens, A. M., M. D., Instructor in the University of Pennsylvania and in the Woman's Medical College of Pennsylvania. 4th edition, revised and enlarged. Illustrated. Pages 500. Price $2.50. W. B. Saunders, Philadelphia.

This is an outline of the practice of medicine which the student is expected to enlarge upon by close attention to his lectures and bed-side instruction. That there is a field for such a volume is proven by the fact that this is the fourth edition. It is a large volume on the practice of medicine, condensed into the size described.

A HAND BOOK OF SIMPLE EXPERIMENTS IN PHYSIOLOGY. By C. H. Stowell, M. D. Illustrated with original pen sketches Silver, Burdett & Co., Boston. 1897.

This manual, which has been in course of preparation for sometime, is especially for those teachers who give instruction from either of the three volumes of Physiology which form The Health Series of school text-books, by the same author.

SURGICAL HINTS FOR THE SURGEON AND GENERAL PRACTITIONER. By Howard Lilienthal, M. D., assistant attending Surgeon to Mi. Sinai Hospital, New York city. International Journal of Surgery Co. 1897. Price 25 cents.

The author here presents a number of observations and suggestions whose value has been thoroughly tested at the bedside and in the operating room.

ELEMENTARY BANDAGING AND SURGICAL DRESSING. By Drs. Pye and Smith, of London. Seventh edition. 200 pages. Price 75 cents. W. B. Saunders. Philadelphia. 1897.

This little volume deals with bandaging, splints and the management of cases of emergency. It will be especially useful to students when they begin their work and also valuable to surgical nurses.

Annual report of the Supervising Surgeon General of the Marine Hospital Service of the United States for the fiscal year 1896.

Report of the Health Officer of the District of Columbia 1896.

The Medical Society of the District of Columbia is responsible only for the "Transactions" published in this journal. It is entirely free from any connection with the Editorial and Business management.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M.D.

STATED MEETING OF JAN. 4, 1897.

Dr. S. C. Busey, President, in the Chair.

The minutes of the Stated Meeting of July 6, 1896, were read and approved.

The Treasurer submitted his annual report for 1896, showing a balance in the treasury of $2,259.31. The auditing committee consisting of Drs. Magruder and Kleinschmidt, reported the account correct.

The following members were dropped by the Constitution for non-payment of dues: Drs. J. B. Baggett, J. Lacy Brayshaw, George W. Grinder, William E. Handy, William May, Richard S. Hill and Allen Walker.

The Board of Examiners presented their final report, having been legislated out of office by the passage of the bill to regulate the practice of medicine in the District of Columbia.

The Committee on Legislation presented an act relating to the Adulteration of Foods and Drugs in the District of Columbia. On motion the Bill was accepted by the Society, and was returned to the committee with instructions to urge its passage by Congress.

An assessment of four dollars per capita was then levied to meet the expenses of the Society for 1897.

Dr. Kleinschmidt moved that the treasurer's salary be increased from fifty to one hundred dollars per annum, and the motion was unanimously carried.

At the request of the chairman, the health officer, Dr. W. C. Woodward, was unanimously elected an additional member of the committee on Public Health.

The following officers were elected for 1897:

President, Dr. Samuel C. Busey.
Vice Presidents { Dr. Jas. D. Morgan, Dr. Isaac S. Stone.
Treasurer, Dr. C. W. Franzoni.
Corresponding Sec'y, Dr. T. C. Smith.
Recording Sec'y, Dr. Sam. S. Adams.
Librarian, Dr. Edwin L. Morgan.
Board of Censors { Dr. E. F. King, Dr. C. W. Richardson, Dr. J. T. Winter, Dr. C. H. A. Kleinschmidt, Dr. G. N. Acker.

The proposed mendments to the Constitution and By-Laws were taken up and were passed, after a few minor alterations in the context.

The amended Constitution and By-Laws was then returned to the special committee, with instructions to have 1,000 copies printed, after correcting the typographical errors. This committee was further instructed to prepare a complete roster of the members and have it bound with the Constitution.

MEETING OF JANUARY 13, 1897.

Dr. S. C. Busey, President, in the Chair.

Dr. Busey, for the committee on Legislation, presented copies of the Protest of the joint committee on Vivisection.

The President announced the following standing committees:

Essays—Drs. T. C. Smith, Pool and Woodward.

Microscopy—Drs. Lamb, Acker and Balloch.

Washington Directory for Nurses—Drs. S. S. Adams, Barker and McLaughlin.

Legislation—Drs. Busey, chairman; W. W. Johnston, G. Wythe Cook, John S. McLain, George L. Magruder, C. H. A. Kleinschmidt, C. G. Stone, Z. T. Sowers and W. C. Woodward.

Public Health—Drs. W. W. Johnston, chairman; Frank Hyatt, W. P. Carr, Clifton Mayfield, D. Olin Leech, James D. Morgan, J. W. Chappell and W. C. Woodward.

Abdominal Pregnancy.

Dr. Joseph Taber Johnson presented a specimen of abdominal pregnancy. The patient was thirty-six years of age, and had been married seven years before becoming pregnant. The pregnancy went on for two or three months, when one day, while in the bath room, she was taken with a severe pain in her abdomen, but not such a pain as we usually find in cases of ruptured tubal pregnancy. She was soon relieved by the use of opium, and in a few days she was out again. After this she had three attacks; and several physicians were called in to see her. No examination was ever made I believe, to find out whether she was pregnant or not, for there seemed to be no indication for one. After awhile, however, she felt the movements of the child. The only symptoms from which she suffered up to this time were nausea and occasional attacks of hysteria attended with pain. I was asked to see her in consultation when she was about six months pregnant. I made some suggestions to the attending physician about the treatment of the nausea and suggested, if none of the drugs gave relief, that after the child became of viable age, he should bring on premature labor. It is unfortunate that this was not attempted, for the true condition of affairs would have been discovered. The time came when she should be confined, and she still felt the movement of the child. Time went on, without any symptom of labor appearing, the family became restive and requested counsel. Dr. Robert Graham was called in, and after a careful examination said that he did not think the child was in the uterus at all, but it must be a case of extrauterine pregnancy. He requested Prof. A. F. A. King to see her, but he hesitated to commit himself until the patient could be etherized and the uterus interrogated. On Sunday last he examined her under an anæsthetic, and found the uterus empty. I was telephoned Sunday night to see her the next day prepared to operate for extrauterine pregnancy. The operation was done the next day, Monday, January 11, at 2 p. m. When I had cut through the abdominal wall and made a nick in the peritoneum, there was the child lying in plain sight without any sac around it. Of course it is possible to cut through a sac without recognizing it, but that this was not the case in this instance was proved by the fact that by drawing the abdominal walls apart the child was seen in plain sight lying loose among the intestines. It proved a very easy thing to deliver the child which weighed ten pounds and had

evidently been dead for some time. I then attempted to see if any hemorrhage would come through the cord, but none came, showing that the placenta circulation had stopped. From these facts I estimated that the child had been dead about eleven days or two weeks, and it was evident that if the operation had been done two weeks earlier the child could have been easily saved, for there is nothing dangerous to the child in the operation. Of course the thing that was done as soon as the child was delivered was to feel down along the umbilical cord for the placenta, which was found attached in Douglas' pouch and up over the body of the uterus. I passed my hand around what appeared to be the placenta, and bulging out above the mass was another large lobe. It was not evident what it was. Dr. King suggested that if it was the uterus it was evidently gangrenous and would have to be taken out. In attempting to lift this mass out of the opening there was a most terrific and alarming hemorrhage, and the only thing to do to save the patient's life was to lift up the uterus with one hand and clamp forceps around the worst of the bleeding surfaces until the hemorrhage was stopped and then to flood the cavity with pitchers of hot water. One of the forceps was on such a mass of mushy material, that I was afraid to take it off, and it is on there yet protruding from the wound. The uterus proved to be all right, and was not removed, but both ovarian arteries were tied as well as the tissues under the forceps. Monday afternoon the operation was done, and the patient was put to bed with a pulse of 134. I wish to say that while the operation was going on Dr. King transfused the patient with a normal salt solution. The loss of blood during the operation must have been between two and three quarts. An astonishing feature of the case is that the patient is now doing very well, her pulse being 116 and her temperature 101°. She is bright and cheerful, laughs and talks about her experince, and it is remarkable that she should be in such good condition so soon after such an operation.

Some writers doubt whether abdominal pregnancy can ever take place primarily, but I see no reason why the fecundated ovum may not drop directly into the abdominal cavity.

It is the seventeenth day now since the operation and the patient has a pulse of 114 but her temperature varies from 97 to 99½°. She only needs food and time to get well over her four months in bed and the strain of the operation and the hemorrhage.

DISCUSSION.

Dr. Robert Graham on invitation said: I was called in on New Year's evening, and found the patient very nervous and hysterical. I did not know whether it was true hysteria or not, but I found that by diverting her attention she would still cry out with pain if I touched the tender spot in the groins. That satisfied me that it was more than hysteria. I made a vaginal examination and was able to pass my finger through the external os as far as the second joint, but I could not get it into the internal os, which was very hard. By making counter pressure with one finger in the internal os and the other hand on the abdomen I could not find anything in the uterus. Taking the history of the patient for several months past with her condition as I found it, I became convinced that there was nothing in the uterus, so I suggested to the husband that I would like to have Dr. King see the case. Dr. King made an examination, but could not find any part of the fetus presenting. Two or three days afterwards the nurse told me that there was an offensive discharge, so I telephoned Dr. King asking him to see the case again. He dilated the cervix and found the uterus empty, Dr. Johnson was

called in and performed the operation, as he has described.

Dr. A. F. A. King said: Altogether the case reported was a very obscure one, though it was evident that the woman was pregnant. After the cervix had been dilated with Goodell's dilator and a finger introduced *in utero*, it was clear that the uterus was empty. In the first place I had hesitated to dilate the cervix for fear of bringing on premature labor, but that was the only way by which the diagnosis was positively cleared up. It was owing to my conservatism that the case was delayed. Dr. Graham had made the diagnosis of extrauterine pregnancy, for which he deserves every credit, but I confess that I was at first very skeptical. When Dr. Johnson had finished everybody thought that the woman would die, and I begged him to hurry up and not let the woman expire on the table. The hemorrhage was something terrible, but the placental circulation had ceased or there would have been even more hemorrhage.

I have no doubt that so-called primary abdominal pregnancy may occur, for I can see no reason why the impregnated ovum might not drop out of the tube and into the abdominal cavity. The placenta may become attached to, and grow upon any part of the peritoneal membrane. If any other case like this should ever occur I beg gentlemen to remember that the external os and cervix may be extremely soft while the internal os is as hard as a scirrus cancer. I think that Dr. Graham deserves great credit for having made a correct diagnosis in this case, and that Dr. Johnson is to be congratulated on the result.

SYMPATHETIC OPHTHALMIA.

By W. K. Butler, M. D.

As sympathetic ophthalmia is a disease in which we can do more by prophylaxis than by treatment it is well worth the consideration of the Society.

All diseases or injuries of the eye do not cause this disease, but we find that wounds of certain regions and diseases of certain kinds are the predisposing causes. We see sympathetic trouble in the eye so frequently on account of the intimate relation between the two eyes through the optic chiasm and their rich supply of nerves. No other special sense receives such a variety or so great a number of the cranial nerves as the sense of sight. It is only necessary to remind you that the first, third, fourth, fifth, sixth and seventh in addition to branches from the sympathetic all contribute to its functions. Various theories have been advanced to explain the method by which the disease travels. The two principal ones are the germ theory supported by Deutschmann and others, and the nerve irritation theory. Deutschmann thinks that he has proved that germs have travelled from the injured eye backward along the optic nerve, have reversed their course at the optic chiasm and ascended in the lymph channels along the optic nerve of the other eye and thus infected it. But in numerous cases examined with the greatest care no germs could be found, and in suppuration of the eyeball where there is such a wealth of bacteria, sympathetic disease is not at all frequent. The existence of the disease without alteration of the optic nerve and the failure of experiments by injecting the staphylococcus aureus into the vitreous with the result of causing a suppurative panophthalmitis in the attached eye while the infiltration extended only a short distance backward through the optic nerve, are all opposed to Deutsch-

mann's theory. In my opinion the more plausible theory is that which attributes to the ciliary nerves the channel through which the irritation is conveyed. Usually one or the other of the following conditions is the exciting one:

1. Punctured wounds of the ciliary region or as it is called by Nettleship the dangerous zone, extending about one-fourth inch in diameter around the corneal margin. Such injuries account for about eighty per cent of the cases of this disease.

2. Foreign bodies within the eye.

3. Perforations of the cornea either by ulcers or wounds in which the iris becomes entangled.

4. Operations on the eye resulting in one of the above conditions, as prolapse of iris following cataract extraction.

5. Intra-ocular tumors.

6. Ossification of the choroid or ciliary body.

Sometimes also the pressure of an artificial eye may cause sympathetic trouble. In short any disease or traumatism affecting the visual tract may do it.

The period of incubation varies from a few weeks to a number of years. Rarely is it seen as early as one week and on the other hand it may not devolop until as late as fifty years. One case which I enucleated was injured by a perforating wound twenty-seven years before. Alt reports one occurring as late as sixty years after the exciting cause. The symptoms are divided between the exciting eye and the sympathizing eye and usually begin as a sympathetic irritation rather than an inflammation.

In the exciting eye we find, first, congestion in the ciliary region; second, photophobia; third, tenderness on pressure; fourth, neuralgic pain and lachrymation. While in the sympathizing eye the symptoms are functional, viz: impaired accommodation, decrease in visual acuity, contraction of the field, pain, photophobia and lachrymation, in brief all those symptoms pointing to an irritation of the functions of the eye. As has been intimated more can be done by way of prophylaxis than by actual treatment. This consists in the enucleation of the exciting eye. Such radical treatment necessarily requires the greatest confidence of the patient, as well as the most deliberate judgment of the physician and as the result of the large experience of the best authors the following rules for performing the operation may serve as a guide:

1. Wounds of the ciliary region causing the immediate loss of sight or its ultimate loss from inflammation being reasonably certain. To this rule I would make the exception of young children who can be kept under observation and the eye removed if necessary when any symptoms of irritation arise. Enucleation in children may cause a loss of development of the orbit and seriously interfere with the future wearing of an artificial eye.

2. Wounds in the dangerous zone already complicated by a severe iritis or cyclitis even if sight is not entirely destroyed.

3. An eye with a foreign body, not removable, in which a severe iritis is present.

4. An eye which has been destroyed by plastic irido-cyclitis, or a shrunken globe with irritation in the ciliary region.

5. A lost eye with beginning sympathetic irritation in the other.

6. A wounded eye with repeated relapses of sympathetic irritation.

If so unfortunate as not to prevent the disease, operative interference is of doubtful propriety, but it must be treated on general principles applicable to the nature of the disease, viz: dark room, complete rest, leeches and atro-

pia, if not contraindicated. I have brought nine specimens showing the nature of some of the lesions which lead to this disease.

I cannot close this brief contribution without reference to one case recently brought to my clinic.

September 18, 1896. Sarah T., white, aged eight, was brought by her father to see if anything could be done to restore her sight. He gave the following history: In July, 1895, she was cut in the left eye with a piece of glass. At the time of application she was totally blind in both eyes from phthisis bulbi. The eyes were then quiet and nothing could be done. If the injured eye had been enucleated at the time, although a severe disfigurement would have resulted the sight of the other would doubtless have been saved.

DISCUSSION.

Dr. Swan M. Burnett said: We do not know yet what are the causes which produce sympathetic ophthalmia. The theory of bacteriological infection advanced by Deutschmann seems to offer the most plausible explanation of its origin. What Dr. Butler says as to disease of one eye being followed by sympathetic ophthalmia in the other eye is true, but they occur in cases in which the eye has been opened, thus allowing the germs to gain an entrance. But we never find sympathetic opthalmia of one eye following iritis in the other. A non-perforating disease of one eye is seldom or never followed by sympathetic affection of the other eye. A knowledge of that fact should hush all assertions as to the part played by the nerves in the production of sympathetic disease of the other eye. It is true that bacteriological examinations have been made of these eyes and that no micro-organisms have been found. But the fact that we have not yet found either the organism of sympathetic ophthalmia or its product does not justify us in assuming that it does not exist. Dr. Butler speaks of the dangerous zone, and of the serious nature of injuries affecting it. He says it is very richly supplied with nerves and lymphatics, but in addition to that it is one of the most vascular parts of the eyeball. While it is true that we have not yet any positive evidence in support of any of the theories of infection, what we have leads us to tentative acceptance of the migratory theory of Deutschmann.

Dr. E. Oliver Belt said: Deutschmann's theory that sympathetic ophthalmia is the result of germ migration from the injured eye to the sound eye has been attacked by a number of ophthalmologists. Randolph of Johns Hopkins, who has carried on experiments in this line on dogs for the purpose of verifying Deutschmann's theory, has been unable to trace the germs further than the optic chiasm. Bach in Germany, has also been working in the same line and has had the same results. We find sympathetic troubles in the eye more often in the ciliary region than in the optic nerve region. If the disease were the result of the migration of germs along the path of the optic nerve we would expect to find neuro-retinitis more frequent than disease of the ciliary region, but it is more rare. Another objection to the germ theory is that sympathetic troubles sometimes come on years and years after the original injury has been received.

Dr. C. R. Dufour said: Bach has made many experiments by injecting germs into the eyes of animals, and in no case was he able to produce sympathetic ophthalmia in the other eye. On the other hand, experimental irritation of the ciliary nerves of one eye, was followed within half an hour by manifestations in the other eye. Bach's theory is therefore, that the sympathetic disease is set up by irritation of the second eye. He also claims that the irritation may be carried directly through the sympathetic branch of the fifth nerve, and through the sensory fibres of the same nerve.

Dr. L. H. French said: Several references have been made to pan-ophthalmitis, and to the fact that it did not excite sympathy in the other eye. This fact has been made use of for the purpose of attacking Deutschmann's theory of germ migration, but instead of weakening Deutschmann's theory it seems to

strengthen it. When, as in such cases, inflammation is excessive, it results in purulent destruction of the tissues and obliteration of the lymph channels accompanying the nerves and thus all transference of organisms is prevented. Reference was also made to the long time that may elapse between an injury to one eye and the appearance of sympathetic affection in the other, and this has been brought forward in opposition to Kneis' theory as elaborated by Deutschmann. But this is also an argument in support of his theory, for the germs may become encapsulated until from some slight injury received or spontaneously perhaps, years afterwards, they are released and become again active. So this fact also seems to strengthen the theory of germ transmission by the lymphatic channels. In discussing the treatment of the disease nothing has yet been said about the use of mercury, which appears to exert a very decided influence over the course of the disease, and ought to be used systematically in sympathetic ophthalmitis.

Dr. Butler, in closing the discussion on his paper, said: Dr. Burnett's defense of the germ theory is an able one, and I can see how it might apply to cases following destruction of the eye from wounds or perforating disease, but this theory has not yet been proven. I admit that a large number of cases come from wounds of the eye, but there are many other cases in which there were no injuries. Such a case is the specimen I have presented this evening where there was destruction of the eye following fever. Of course it is possible that in this case there may have been a perforation.

MEETING OF JANUARY 20, 1897.

Dr. S. C. Busey, President, in the Chair.

The Opium Habit and the Sale of Opium in the District of Columbia.

A letter was read from Dr. Llewellyn Eliot, president of the Medical and Surgical Society of the District, enclosing a report made to that Society by a committee appointed to investigate the extent to which the opium habit prevails in the District and the operation of existing laws as to the sale of opium and its preparations.*

Laryngectomy.

Dr. C. W. Richardson reported a case of laryngectomy for the removal of an epithelioma of the larynx. The specimen was shown. The patient had been referred to him by Dr. W. K. Butler during the month of April, 1896, for the purpose of removing a large growth which was growing from the left lateral wall of the larynx. The growth was pediculated of an intensely red color. Removed entolaryngeal it proved to be an epithelioma. The patient was seen occasionally by Dr. Butler for several months. In September the question of a more radical operation was considered and although the patient recognized the necessity for interference, he delayed from time to time, until his condition became very serious. The man was a German, fifty-four years of age, medium height and somewhat emaciated. He denied syphilitic infection; there was no tuberculosis in the family. Just previous to the operation the laryngeal condition was as follows: The voice was rough, hard; almost whispering; cough was not annoying; breathing quite difficult, especially when the patient was moving about and at night; there was never any pain in the larynx. The laryngeal picture showed both cords completely destroyed and the chordal region on both sides filled out with an irregular line of nodulated growth of a grayish white color. The site of the

*This report was, after reference to the Committee on Legislation, sent to Congress and presented as a memorial to the Senate. It was ordered to be printed and appears as Document No. 74, Fifty-fourth Congress; Second session.

original growth was apparently healthy. The view of the removed larynx shows that the growth extended from the chordal region to and below the cricoid cartilage, nearly filling the whole of the lumen of the larynx. A preliminary tracheotomy was done, the opening being between the fifth and sixth ring of the trachea. No difficulties attended this operation. One week thereafter, the laryngectomy was done. The trachea tube was removed and a Gerster tampon tracheal canula was introduced, through which the anæsthetic was administered. The primary incision extended from the thyroid notch to just above the tracheal wound. These flaps were dissected away from the lateral walls of the thyroid until the larynx in the region was nearly free. A transverse incision, parellel to and just below the thyroid bone, was then made and the whole larynx thoroughly separated. The right and left cornea of the thyroid were then exposed and separated at their attachments, the thyroid was then divided and the larynx lifted out and separated from the œsophagus, and the organ was removed by dividing the trachea across, between the first and second ring. The upper end of the œsophagus was united to the pharyngeal muscle; the trachea drawn out of the wound and stitched into the edges of the wound; the wound packed and brought together, and the operation was completed. The patient progressed favorably until the afternoon of the third day when acute œdema of the lung set in from which he died on the night of the third day.

DISCUSSION.

Dr. Butler said after several unsuccessful attempts to remove the growth it became evident that a radical operation was the only thing to be done. In such cases the possibility of totally removing the entire growth is not great and the patient has about the same chance of living without the operation as with it. The mortality in these cases is frightful, and I should in future advise a preliminary tracheotomy.

Dr. Swan M. Burnett presented the following pathological specimens:

1. FORMATION OF BONE IN THE VITREOUS.

The result of a long continued inflammation of the choroid.

2. PHLEBOLITH IN CONJUNCTIVAL VEIN.

Varix of a conjunctival vein is not common. He had seen only three or four cases. They were easily cured by ligation. Their origin was obscure. In this case a hard mass, oblong in shape, and 8x6x4 mm. in size, was found in the mass when it was dissected out. A section after decalcification, showed it to be laminated in structure and there was no doubt that it was a vein stone such as has been described in the treatises on surgery as occurring previously in the pelvic veins. This is the first case reported as found in the conjunctiva.

3. SO-CALLED GUMMA OF THE CILIARY REGION.

He had seen several cases like the specimen, occurring always in young negroes, and usually within a year of the infection. The disease developed with great rapidity and was very virulent and the question in his mind was, was it a true gumma. The presence of giant cells led to the thought that they might be of a tubercular character. He had observed that as a rule syphilis, in the eye of the negro, was mild in its course and very amenable to treatment.

DISCUSSION.

Dr. C. W. Richardson said: I have not had very much experience in treating negroes for syphilis, but this discussion recalls to my mind a case that occurred under Dr. Wood's treatment while I was resident physician in the University hospital. It was a case of a negro with a cerebral lesions of syphilis, and I never

saw a case improve so rapidly under treatment as did that of this man.

Dr. H. A. Robbins said: The case of gumma of the eye is a most interesting and unusual one. The eye is the only organ of the body in which the occurrence of syphilitic gummata is not mentioned. We hear of gumma of the heart and brain and other organs, but not of the eye. I think that negroes are amenable to treatment, even more so than the whites.

Dr. G. M. Kober said: In regard to the question raised by the President, Dr. Livingston writes that the negroes of south western Africa recover from syphilis without any treatment.

Dr. L. H. French said: I recently had the pleasure of a conversation with Slatin Pacha who had been in captivity in Africa for a great many years, and he told me that among certain tribes those men who had never had syphilis were laughed at and regarded as not being men of the world. The disease was almost universal among them.

Dr. S. M. Burnett, in closing the discussion, said: The question of the relation of certain diseases to the white and colored races has not yet been dealt with as it deserves. I have been interested in this qnestion for a number of years, and I was one of the first to publish the statistics of this question, and I have tried to note the effect of syphilis on the eye in the same way. I believe that negroes have syphilis in a much milder form than white men, but I have also seen it stated that they had it in a much more virulent form, and that when a negro contracted syphilis he went to the bad, and it was for that reason that I have brought the matter to the attention of the Society in the hope of eliciting an opinion as to whether this is a gumma or not. Is it tuberculosis? If so, why is it that a negro with syphilis has a latent tubercular disease suddenly breaking out with fulminating violence?

MEETING OF JANUARY 27, 1897. Dr. S. C. Busey, President, in the Chair.

SOME PHYSICAL AND THERAPEUTIC FACTS ON STATIC ELECTRICITY.

By F. B. Bishop, M. D.

Static electricity, by chemic action, decomposes air, and as its constituent elements are liberated the oxygen is attracted to the positive pole in a condition known as allotropic oxygen, or ozone. There are many methods of producing ozone, but undoubtedly the most abundant supply is by the action of the electrostatic machine on air.

It is the nature of static electricity to accumulate upon globular masses, and when approached by a surface or another globular mass, connected with the earth, a disruptive discharge is the result; while a fine point or brush produces a convective discharge. My static cage consists of a circle of wire netting, brass chains from the top; tinsel brushes are fastened to the inside of the cage and to the brass chains above. The patient is placed inside the cage, upon a metal covered, insulated platform; the platform is attached to the positive pole of the machine and the cage to the negative pole; and when the machine is set in motion the current is drawn from the patient by every tinsel brush in the form of a convective discharge. The entire surface of the body is subjected to a most delightful stimulating brush discharge that intensifies the peripheral circulation and often produces a pleasant

and healthy glow, with a feeling of comfort and exhilaration which lasts from one to several hours. Metabolism is made more active, carbon di-oxide eliminated, the volume of urine is often increased; and that the blood is directly acted upon is often very evident by the rosy hue that comes to the cheeks.

Amenorrhea and dysmenorrhea I find yield more readily to local treatment when followed by tonic treatment in the cage with the ozone bath.

A gentleman who was treated locally by galvanism, for a tubercular ulceration, was put daily in the ozone cage and made to inhale deeply during the treatment. The ulceration healed and the patient gained ten pounds in weight. He has gained in strength and his ability to withstand fatigue has correspondingly increased. Nearly all cases treated have been benefitted, where the constitution has been weakened by the fatiguing effects of prolonged acute disease, leaving the patient in a nervously prostrated condition.

There is another method of treatment called "The general static oscillation". Here the cage and platform are connected to small Leyden jars; or, if I desire a very mild effect with increased number of oscillations, two small static inductive coils are introduced into the circuit. When this is done the patient is subjected to an oscillation of several hundred thousand periods per second, and representing a pressure of several thousand volts. The class of patients who are mostly benefitted by this method of treatment are those suffering from the effects of a sedentary mode of life, who are dyspeptic and whose flesh is flabby, where metabolism is sluggish. Ten, fifteen or twenty minutes of general static oscillation produces a comfortable sense of warmth, accompanied by a general perspiration over the entire body. It is found very useful with invalids who are unable to take gentle exercise; and in many cases, where the general system has suffered materially in consequence of a prolonged and painful local trouble, this treatment has been found to aid very much in the cure of the local lesion. When we stop to consider that the patient is placed in a circuit with an alternating current of very high potency and great frequency, and that every tissue of the body is made to vibrate with the vibrations of the machine—and that so gently as to be absolutely agreeable—it is very natural that we should expect powerful therapeutic and physiologic effects. In suitable cases our expectations are usually verified, when the patients stick long enough to the treatment. The great trouble is that patients who have tried nearly all other methods of treatment, and have suffered sometimes for years, imagine that when they take electrical treatment they ought to be benefitted at once. I am often told by patients that they have been instructed by their family physician to come and try electricity for a week or so. Now, there are no chronic cases, with which I am familiar, that can be much benefitted by electrical treatment in one or two weeks. But they can often be benefitted, and frequently cured, by treatment continued as long as treatment is necessary, which may be several weeks, or several months. The treatments are modified to suit each case; and there are many methods of localizing the current upon parts directly affected. Several cases of spinal irritation have been greatly relieved by localizing the brush discharge upon the tender parts and giving general treatment with the oscillating current.

The static spark is administered by the brass ball electrode, the size of the ball being graduated by the local effects de-

sired. A large ball gives a heavier spark than the smaller ones. For this reason, as before stated, static electricity accumulates upon globular masses; and the larger the mass, the greater the accumulation. So when the discharging rods are separated and the brass balls brought near the body (the body of course representing the other pole of the battery) a disruptive discharge is the result; for the electrostatic discharge accumulates upon the ball until the tension is sufficient to overcome the intervening air space between the ball electrode and the patient.

Every new discovery in high tension currents seems to find an important place in medicine, on account of some physical, physiological or therapeutical effects peculiar to this current. One of the latest marvels and one which has opened up a new field to the scientific worker is the discovery of the X rays by Prof. Roentgen. And in this line of research the static machines are sharing the honors, at least equally, with the Rhumkorff coils and other high tension apparatus. With my machines I have produced as good X rays, as exhibited by the fluorscope, and have taken some very good photographs of the bones of the hands and arms.

DERMATITIS FROM THE X RAYS.

By A. F. A. King, M. D.

A gentleman, eighty years old, was submitted for forty-five minutes to the passage of the X rays through the bladder with a view to the diagnosis of calculus. The experiment demonstrated the absence of any stone. The patient felt some slight discomfort during the exposure.

Twelve days later an irregular region of skin, about four inches in diameter, just above the pubes, was found to be acutely inflamed. The redness was of a purplish tint, almost like a nævus, and its boundaries ended abruptly in normal skin. The redness disappeared on pressure for the most part but perhaps not entirely. An ointment of benzoated oxide of zinc with lig. plumbi subacetatis was ordered.

A week later the patient reported that he was "casting his skin like a serpent" from the inflamed area and that the denuded surface was very painful, and was discharging a little pus, which only healed by granulation at the end of about two months. There can be no doubt that it was the X rays that produced this dermatitis. In the *Journal of the American Medical Association* for November 14, 1896, Dr. G. C. Skinner reports a case where there was also the same period of incubation of ten days, between exposure and appearance of symptoms. In a case reported by Dr. A. B. Kibbie of Seattle, Washington, in the *New York Medical Journal*, for January 16, 1897, the same period of incubation of ten days was again observed.

In this case the doctor exsected a bit of skin for microscopic examination. He gives his conclusion that "the histological changes appear to be simply a dermatitis, with degeneration of the cells of the rete mucosum". In the case of Fuch's quoted by Dr. Kibbie, pain began during exposure, while swelling and even vesication were observed within fifteen minutes. It would therefore seem that the celerity with which symptoms appear in different cases, depends, per-

haps in some measure on individual idiocyncrasy of the patient, and sensibility of the skin itself; but chiefly upon the duration and strength of the exposure, and the frequency of its repetition.

Some writers have come to the conclusion that the dermatitis is nothing more or less than a single burn of the second degree, and I see nothing to positively conflict with this conclusion, unless it be the long interval of ten days (more or less) so often observed to elapse between the time of exposure and the appearance of symptoms. In sun-burn and after exposure to ordinary heat or scalding water, the symptoms usually appear much more promptly.

THE ROENTGEN X RAY: TRAUMATISM. REPORT OF A CASE.

By Capt. Wm. B. Banister, M. D., U. S. A.

Read by Major Charles Smart, M. D., U. S. A.

A captain of one of our regiments was accidentally shot in the lumbar region to the right of the spinal column, the ball grooving the crest of ilium. It ranged upwards and inwards and lodged probably in the neighborhood of the spinal column. Immediate paralysis from the waist downwards resulted. There was slight sensation in the left foot within an hour or two after the injury and the patient was able to lift that foot within two or three weeks. In three weeks he began to have acute pain in the right leg but could not move it, and was confined to bed for eleven weeks. At the end of a year he could walk with the aid of a cane; and there has been steady improvement ever since. About sixteen months after the injury the use of the left leg was not impaired but there was some atrophy of the right thigh with paresis of the flexors supplied by the anterior crural nerve. With the aid of a cane he could walk fairly well and had difficulty only in ascending steps. The bullet presumably ploughed its way through the dense lumbar fascia and muscles until arrested in its course by the spinal column; and its impact caused sufficient hemorrhage either in the cord or its membranes to temporarily interfere with the functions of the nerves given off below the point of compression. The case had been improving steadily for a year and there was therefore, no good surgical reason for attempting the removal of the bullet. While in Chicago he had three exposures to the X rays of one and a half hours each, making four and a half hours in all that the tissues of the skin were subjected to their action. As far as locating the bullet was concerned the result was negative. Some redness of the skin resulted but not sufficient to cause any inconvenience. We may conclude therefore, that the integument can stand an exposure of four hours divided between two successive days, without material damage. Later the captain accepted the invitation and underwent further exposures which were as follws:

Date	No. of exposures.	Average length of each.	Total exposure.
Sept. 9,	3	1 1-2 hrs	4 1-2 hrs.
Sept. 10,	2	1 1-3 "	2 2-3 "
Sept. 11,	2	1 1-2 "	3 "
Sept. 12,	1	1 2-3 "	1 2-3 "
		Grand Total,	11 5-6 "

There was no result so far as locating the bullet was concerned, but there were other results that left the patient a sadder and a wiser man. The skin began to show the action of the X rays and the

inflammation extended each day during the exposure. The vacuum tube, during the exposure, was held a little below and to the right of the umbillicus. In that situation the epidermis had been destroyed for a space of about one-half the size of a man's hand exposing the red inflamed and hyperæsthetic cutis vera from which the outpouring of serum was very profuse. A red blush extended from this center in every direction but principally to the right of the median line and from below upwards. The death of the epidermis rapidly extended and large blisters formed beneath it such as occur in scalds. In a few days the denuded surface measured 8x15 inches, rectangular in shape, the largest diameter being from above downwards. The superficial layer of the cutis vera was thrown off leaving a raw bleeding surface and the quantity of serum (with some pus), that exudes was astonishing. The lesion extends upon the thorax to the level of the right nipple. The patient has been confined to the bed for a month and the denuded surface is so hyperæsthetic that he could not stand the application of the gauze and absorbent cotton dressing, and it was necessary to cover the surface with perforated gutta-percha tissue. No drying or astringent powders seem to have any effect in checking the outpour of serum, which is quite an annoyance to the patient. His beard is naturally dark brown in color, but since the prolonged exposure to the X rays no beard at all has grown on the chin where formerly a goatee flourished and the rest of the beard on the right side which was in the line of the ray has turned white or light yellow. The integument of the chin was reddened but the epidermis was not destroyed. During the exposure the patient sat with the right hand grasping the rounded end of the arm of a chair. It can be readily seen by trial that if one grasps with the right hand the arm of a chair in a natural pose, that the dorsal surface of the fingers turn outwards and forwards while the dorsal surface of the last phalanx of the thumb turns forwards and inwards and in that position would be impinged upon by the X rays at a right angle, at least that is the only explanation of the fact that the integument over the dorsal aspect of the last phalanx of the thumb was reddened and it seems quite likely that the nail will be lost. It would seem that the rays impinging upon the tegumentary surface at very acute angles produce no irritating effect, for the curved lateral aspect of the abdomen which must have been impinged upon by the rays, showed no sign of irritation, while the thumb, which was further removed from the focus of irritation was affected. The intensity of the irritation seemed to be in proportion to the approximation to a right angle at which the rays impinged upon the tegumentary surface. In that respect the Roentgen rays seem to resemble heat rays. As the X rays pass through the body it is strange that no irritating effect is produced upon the peritoneum a much more delicate membrane than the skin. This fact would lead me to believe that the inflammation of the skin resulting from the X ray is due to the action of the X ray on the terminal nerve filaments in the skin, probably the vaso motor nerves, as the structure that receives the full intensity of the rays is the only one affected. It is therefore a change in the nutrition of the tissues. The patient wore a light weight undershirt during the exposures and felt no heat or pain during the passage of the rays through the skin. This absence of apparent effect might in itself be a source of danger in using the X rays about the face, as it can readily be seen that it might so seriously inflame the

delicate conjunctiva as to even imperil the integrity of the cornea. Again it might cause the permanent loss of eyebrows and eye-lashes and thus disfigure the patient. On the other hand the X ray might with great advantage be used to remove hairy growths for a cosmetic effect, and with a good prospect of the hair not returning.

DISCUSSION.

Dr. Jas. Kerr said: The patient to whom Dr. Bishop referred was a case of tuberculous testicle, the right testicle having been already removed for the same cause. The history of the case was one of a traumatism. The patient had been treated with guaiacol. When he came to me he had lost the testicle from one side, and the other was apparently hopelessly damaged. I may say that in tuberculosis of a testicle following the previous destruction of the other from the same cause the inference is that the disease comes from below upward, and that the removal of the remaining testicle does not eradicate the disease. Under the galvanic treatment his general health improved, and when he left town two weeks ago the enlargement of the epididymis had been reduced two-thirds, the open sinus had closed, and the tubercular focus had disappeared.

Dr. Wm. M. Gray said: I believe that certain persons are especially susceptible to the ill effects of the light, and that a prolonged exposure on such a person will probably produce a dermatitis, while a short one might not. I have read that Mr. Tesla states that the ill effects of the X rays are produced by a layer of ozone being formed on the surface of the skin, and he suggests leading this ozone layer away by a metallic conductor. I believe that coating the skin with vaseline over the part to be skiagraphed would possibly afford some protection.

Dr. Robt. Reyburn said: Nobody now believes that long exposures are necessary, and it is not necessary to expose a patient longer than seven or eight minutes. Another advantage in the use of the static machine over other forms of electricity is that you cannot give it long enough or in force enough to do any injury, for the machine must be rotated very rapidly, and five minutes is about as long as you can get power from it.

Dr. F. B. Bishop said: In regard to the X rays I believe that it produces irritating effects on the skin of sensitive subjects when the exposure is too long. The irritation is due, in my opinion, to the resistance offered by the skin to the passage of the rays. But I am not prepared to accept Mr. Tesla's theory that it is caused by a layer of ozone next the skin, for ozone goes from the negative pole of the battery to the positive. Tesla uses, with his high tension apparatus, only one pole, the negative, I believe, securing a return of the current by the earth. In this case there may be a layer of ozone upon the patient, as he becomes the positive pole of the battery.

MEETING OF FEBRUARY 3, 1897.

Dr. S. C. Busey, President, in the Chair.

Rectal Polypus in a Child.

Reported by Dr. S. S. Adams.

Bessie M. S., aged three and a half years, was referred to me by Drs. C. W. Richardson and Bruckheimer, of this city. She was apparently healthy until one month old, when suppurative cervical lymphangitis of both sides began and lasted until the fifth month; after this there was no evidence of lymphangitis. She nursed until the thirteenth month.

At the beginning of her second year the mother noticed a drop or two of red blood at the end of each stool. In October, 1896, the mother observed an impression throughout the length of every formed stool, resembling a groove that might be made with the tip of one's finger. Her medical attendant atributed this indentation to irregular muscular contraction of the rectum due to a fissure. No rectal examination had been made as it was thought inadvisable to do so without anæsthesia.

January 27 I was sent for and found a long fecal mass, six inches in length and one in diameter. At the end of the mass was a small quantity of blood and mucus; along the entire length was a groove resembling one that would be made by an ordinary lead pencil if pressed firmly into the mass.

My first thought was that a foreign body had lodged in the rectum, but a digital examination, without anæsthesia, disclosed a polypus, about one-half inch in diameter, attached by a pedicle, one inch in length, to the posterior wall of the rectum just in front of the promontory of the sacrum.

January 29, Drs. Bruckheimer and Ashford, assisting, the child was anæsthetized, the rectum dilated with a bivalve speculum, and the growth easily removed with the wire snare. The slight bleeding was controlled by touching the base with carbolic acid, and the rectum packed with iodoform gauze. The tampon was removed the following day and recovery was complete.

REPORT OF THE OBSTETRICAL WORK OF COLUMBIA HOSPITAL FOR THE YEAR 1896.

By Henry D. Fry, M. D.

An outline of the management of patients admitted to the lying-in department is as follows:

All patients are required to take a tepid bath on admission, after which an enema is given. The history of the patient is taken, including the family and personal history, and a physical examination is made by inspection, palpation, auscultation and vaginal examination. The presentation and position of the child is noted, the capacity of the pelvis ascertained by mensuration and the urine examined. Patients admitted about two weeks before the time for delivery, are prepared by baths, regulation of the bowels, etc.

At the beginning of labor, the abdomen, thighs, buttocks and the sulci around the genitalia are carefully washed with soap and warm water and then with bichloride solution 1–2000; vaginal douches of the same are given in cases having acrid discharge. The labor is conducted in one of the delivery rooms under strict antiseptic precautions, and after the termination of the third stage another vaginal douche is given. A wide abdominal binder is then applied, an antiseptic pad placed to the vulva and the patient wheeled to the bed.

The patients are carefully watched during the puerperium, rounds being made twice daily and the pulse and temperature recorded. The bowels are moved on the second day, the patient begins to sit up on the eighth, and if well, is discharged after three weeks.

The delivery rooms have wooden bedsteads and hard, hair mattresses. A Kelly's pad is used during delivery and when the labor is completed it is carbolized and the floor washed up with carbolic acid and soda. Hard hair mattresses are in the rooms and wards. The former are aired after use and in the latter the straw is changed and the tick washed and carbolized before being employed again. As soon as a patient leaves a room, everything is taken out, it is fumigated with sulphur for a day; the floor washed up and clean bed clothes used.

The total number of cases to be ac-

counted for is 288, nineteen left before delivery and one case was not pregnant at all but had a large fibro-myoma, of the remaining 268 cases, nine were miscarriages, and seven women were delivered outside of the institution and sent in afterwards, leaving a balance of 252 labors which were conducted in the department.

We had hoped to present a clean record for the year and were encouraged by the unbroken success of nearly eleven months work. The first death occurred November 29, and was case No. 263. The patient died of uræmic coma on the day of admission, and one week later a second case ended fatally twenty-nine hours after coming into the hospital. These two deaths make a maternal mortality of seven-tenths of one per cent.

Unfortunately the most desperate cases are those neglected ones of pregnancy and labor that are sent to the hospital in an almost hopeless condition. Of the total number of cases no less than ninety-seven or thirty-eight per cent were admitted in actual labor.

The presentations were recorded in 254 cases; 246 of these were of the head, seven were of the breech and two of the shoulders. The presentations of the head were all vertex and 145 were first position; 49 second; 51 third, and one fourth. One breech presentation was changed to head by spontaneous version and one by external manipulation. One case of transverse was changed by external manipulation to head presentation. The cases not recorded were in advanced labor when admitted. Twins were born three times. The presence of albumen in the urine in some degree was detected in a large proportion of 98 out of 148 cases. No convulsions occurred in the hospital cases proper. The five cases of uræmic poisoning were admitted in that condition.

A few points of interest in this connection may be mentioned. The first is to direct attention to the value of citrate of lithia for increasing the function of the kidneys during pregnancy. It can be given in ten grain doses three or four times daily with the confident expectation that it will increase the total excretion of urine in the twenty-four hours with increased elimination of urea and solid ingredients. It has certainly proved the most trustworthy of all the diuretics in such cases. In the treatment of uræmic poisonlng we have made use of the usual remedies, such as hot baths, purgation, morphia and veratum viride by hypodermatic injection; and choral by the rectum. Trial has also been made in such cases as seemed suitable, of venesection and transfusion of normal salt solution.

In 157 examinations of the pelvis, seven were found to have some diminution of the measurements. One case left before delivery, two had prolonged labor, and two required instrumental assistance.

In the 280 puerperal cases treated during the year there were thirty four cases (about twelve per cent) of malarial complication. The attacks were mild and yielded readily to quinine. In a number of cases the diagnosis was confirmed by discovery of the plasmodium in the blood. The fever developed on the following days of the puerperium. First day, one; second, three; third, five; fourth and fifth, two; and one each on the sixth, seventh and eighth. It is possible that a few of these may have been of a mild septic character. Puerperal fever occurred in but six cases and in four of these it yielded to local antiseptic treatment without developing any serious symptoms. The fifth case was remarkable, however, for its severity and happy termination.

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CHAS. H. STOWELL, M. D. EDITOR.

THE EDITOR'S TABLE.

Prognosis of Valvular Lesions.

Among 5,827 patients examined by Dr. Jas. K. Crook, of New York, 503 were suffering from some form of disease of the heart or great thoracic vessels. Of the 503 cases, 277 were functional and 226 organic. Dr. Crook discusses the prognosis of valvular lesions, in a recent number of the *New York Medical Journal* and concludes that mitral stenosis is often well borne for many years. The liability to sudden death is not great, but complications are frequent. In aortic stenosis the liability to sudden death is ever present, although, even here, the lesion may be well borne for a long time. The article concludes with the following interesting case:

"It has been the writer's experience that while mitral regurgitation is the most frequent, it is also the most hopeful of all the valvular lesions, and is also the most tractable when complications begin to appear. Numerous cases of this affection have been kept under observation for many years, the patient in the mean time suffering no serious inconvenience. The patient presented to you to-day has had mitral regurgitation since to spring of 1864. He suffered from a sharp attack of articular rheumatism in February of that year, when sixteen years of age. Cardiac symptoms ensued during the following April, when the diagnosis of mitral regurgitation was made by the family physician, Dr. Samuel T. Hubbard, of New York. The diagnosis was confirmed by Professor Austin Flint, Sr., in June, 1865. Since that time the patient has led an active, busy life as a journalist, having been editor of several well known metropolitan publications. He has suffered from three or four subsequent attacks of articular rheumatism, but there has been no extension of the valvular trouble. During this long period of thirty-three years the patient has been under the care of Dr. Flint, Dr. Fordyce Barker, Dr. George M. Beard and Dr. E. Darwin Hudson, all of whom have passed away. He has been under the author's observation since 1890. As you will observe, he is still in possession of all his mental and physical faculties, and bids fair to hold out for many years to come."

Typhoid Fever Germs in Water.

Dr. F. C. Curtis of Albany, N. Y., contributes an article to *Practical Medicine*, from which we take the following:

"What is its life history in water? That it will not live there indefinitely is agreed, but under favorable conditions it may live for months. These conditions

are presence of pabulum, absence of heat and freedom from other micro-organisms. Edwin O. Jordan found that in sterilized Lake Michigan water it retained vitality ninety-three days; in distilled water its greatest longevity was eighteen days; adding B. coli, the B. typhi disappeared very soon. We may be sure that in water fairly free from hostile bacteria, whether in running streams impounded, or in wells, it retains life for a considerable period. Freezing does not affect it. This accounts for the winter epidemics of cities taking water from contaminated streams; the cold destroys or inhibits hostile bacteria. These conditions are diverse from those of soil infection and the consequent autumnal prevalence of the country.

In a large, newly born institution, with every sanitary appliance and unconnected with the surrounding community, supplied with water from a great rapid stream which chemical and bacteriological analysis failed to find other than absolute pure, an extensive outbreak of this fever developed, reaching all the buildings, domiciles and varied inhabitants of every part of it. The exclusion of all other possible sources of infection and the phenomena of its development all determined it to come from this water, which was potentially receiving typhoid excreta from a city in which the disease prevailed to an extreme degree 100 miles away. The purity of the water, so far as the presence of other micro-organisms is concerned, and the rapid flow of the stream made this entirely possible. Details of this, and much other personal and collatable evidence, not within the scope of this paper, confirm the proposition as to the conditions of life in fresh water. These germs will also live for a time in water that is brackish, in seltzer water and the like.

I need not touch upon the life history of this germ in milk, where it finds its ideal environment, on soiled linen, etc. Our principal concern is its life in the soil, the atmosphere and the water.

The typhoid germ is ingested, not inhaled, and, save in the exceptional cases of indigestion with other unsterilized food, it always enters the system in water. Bryce puts the whole matter into an apothegm: In cities that obtain practically all their drinking water from a public supply whose source is beyond possibility of contagion, typhoid fever will practically disappear from the causes of mortality."

The Anti-Vivisection Movement.

The *Open Court* for June contains some interesting reading on the vivisection question. The first article is in the form of a dialogue between the father, a physician, and his son, a medical student. The young man cannot endure the horrors of the dissecting room and so tells his father that he must abandon the further study of medicine. The "horror" does not rest in the fact that cadaves are about, but, "It is the infernal *frivolity* that sickens me," says the son. The son concludes that he must seek another profession. The following conversation takes place:

"Since you are so delightfully inspired for the dignity of humanity,—what profession do you mean, which is so entirely filled with respect for others? Politics, perhaps? Or stock-broking? Name a calling, please, which demands greater sacrifices on behalf of mankind than that of medicine. One of these sacrifices, for instance, is so great that my young medical student is about to desert his colors because of it. Because out of respect for human kind he is repelled by the thought of making examinations of human bodies. Moreover, my boy," added the old man, laying his

pipe on the table, "I had precisely the same experience thirty-five years ago that you are having to-day. My feeling the first time I entered the dissecting-room was one of rebellion. The brutality of the performance, and besides many a jest of thoughtless boys with the bodies, and the vulgarity of it all! Mere butchery! And these 'subjects,'—were they not human beings who a few days before had been living and suffering like ourselves, animated like us by the same ideals, spurred by the same 'demons'! This dead man to whom I am applying the knife mechanically,—is not some mother-heart weeping for him? Or some inconsolable widow, or a deserted orphan? How faithfully this body may have been nursed, how modestly veiled and guarded! And now!—On every highway the hurrying crowds bare their heads for a moment when a funeral passes along; the cemetery is a sacred place in all the world, even when all that rest in it are strangers to us. Everywhere the dead are respected, but not in the dissecting-room. A joyful 'ah!' runs through the ranks of physicians and students, if the cadaver reveals an abnormity from which a human being had suffered untold misery and finally perished! And when I saw how they burrowed into the vitals,—Adalbert, I felt their knives in my own breast. And I felt for the outstretched dead, thinking: If that were my father, or my brother, or my son! So it came about one day that they carried me out of the hall in a swoon——"

"And yet you went back?" the youth exclaimed.

"And yet I went back," replied the old man calmly, "I thought: Consider, if you think that there is too little reverence in the dissecting-room, you must simply carry some into it. At least for your own personal use. Many a calling is sadly vulgar, yet man can consecate it. For coarseness in general, abominable, despicable coarseness, you will never be able to banish from the world. There are vulgar creatures everywhere, even in the temple of knowledge; and men of refinement, even in workshops and mines. The right man consecrates his calling and his work himself. Even if the work is only for money and property, for worldly vanities, man can by a good thought give it noble meaning. The miner, as he goes down into the earth, says: A happy return! The peasant who sets plough to the sod, says: In God's name! The sailor puts out to sea with an appeal to Mary! So they all have their phrases and their prayers with which they refresh their hearts lest they perish and turn to stone. The young physician, of all persons, must not let his heart perish and turn to stone; he needs it too much for the suffering brothers and sisters to whose welfare he has consecrated himself. And so I, too, devised me a phrase, a prayer, for the dissecting-room. It did me good service."

"May I know it?" asked the son.

"You shall know it, Adalbert; you should have hit upon it yourself. You can interrupt your promenades through the room a moment and listen to me quietly. It is a very short lesson. Listen. When I entered the room, and before me on the table lay the form with the dull, yellow, waxy gleam, stark naked, cold as clay, clean shaven, the sunken eye fixed, the features expressionless, robbed of all humanity,—then I thought: 'Thou dear, fortunate dead man! While the most of thy kind must be given over to the earth straightway, thou art chosen to be useful to men even in death! Through thy remains, before they turn to ashes, the flames of knowledge and intelligence will be kindled, of power

and performance for the common weal, so that from thee, thou dead body, new life shall pass into the limbs of the sick. Thou art chosen to contribute to the welfare of humanity. I honor thee!'—Behold, my son, this thought made me strong. Protected by this thought, my heart escaped the danger of growing brutal in the disssecting room, and thus protected, I think I saved for the sick-room what little idealism I had."

"That sounds different," said the student. "Perhaps I will change my mind after all. But why doesn't the professor from his desk talk of these matters?"

"Why, there has to be something left for the father to say."

The editor also contributes an article on The Immorality of the Anti-vivisection Movement, which is a forcible presentation of the subject.

Free Dispensary System. During the past year the authorities of the Rhode Island Hospital have been trying to correct the dispensary abuse. A late number of the *Atlantic Medical Weekly* gives the results of these efforts and they are certainly most encouraging.

During the year there were 653 applicants who were told that their statements of financial condition did not warrant their admission to the hospital unless corroborated by a letter from their physician or employer, and of these but 101 were ill enough to return with such a letter. The remaining 552 either got well very suddenly or else could not produce such evidence.

To summarize: Of the 5,597 actual applicants 931 or 16 per cent, were on their own statement not deserving of aid. Of 262 personally investigated cases, 87 were found unworthy.

The attendance upon the dispensary has been lessened over 4,000 new cases per year. If one-quarter of these be allowed to be unworthy, the plan adopted by the hospital has weeded from the ranks of hospital pauperism over forty-one per cent of unworthy applicants.

It appears, therefore, that these abuses can, in a measure at least, be corrected. The question is, Will they be corrected?

The *International Journal of Surgery* says that, strange to say, many of those able to pay, who patronize the dispensaries, do so, not because they are unwilling to pay, but because their dollar would enable them to see but an ordinary doctor, whereas here they are able to see a "professor" for nothing. Why should they hesitate? Here is a "professor" who makes an intricate diagnosis in thirty seconds by the clock, for stress of time, and prescribes something of which a five-gallon demijohn is kept on the shelves of the dispensary pharmacy. If the patient is requested to pay ten cents for this his chest expands—he no longer can be counted a pauper—and he goes away with the proud consciousness that his debt to the faculty has been settled in toto. We may be exaggerating, of course, but all of us who know how things are, and deplore them, are fully aware of the truth underlying these words, and look with dismay upon an evil that is increasing apace instead of diminishing. According to Darwin, some species improve while others undergo a retrogressive action. As far as its means of livelihood are concerned, the medical species is partaking of the latter. It says but little, and tightens its belt another hole.

A Perfect Physique. One is almost convinced that he is either and idiot, about to be insane, or a degenerate of some kind, simply from reading the opinions of those who hold that an anatomical deformity or deviation is a sure mark of degeneracy. If the head does not measure precisely ac-

cording to some assumed standard, then you are a criminal; and if the palate is not well formed, you are an idiot. This palatal deformity has been much discussed of late years and one observer, Charon, reported that in eighty-two per cent of idiots and feeble-minded the palate was abnormal. This same writer found the abnormal palate also in nearly all the cases of epileptics and insanity. But this appears to be only another illustration of the fact that when some persons want to see a thing it is generally found.

Dr. Walter Channing of Egland, now comes forward and confirms a report, first made by an American dentist, that there is nothing in this theory of palatal deformity. He says that the palates of two-fifths of the cases of idiocy are of good shape, and that the palates of normal individuals are frequently deformed. His examinations show that the palates of the average children and of idiots, under eight years of age, do not present any marked difference. And he very justly concludes that the statement that "a deformed palate is a sign of degeneracy" is not proven.

Subnormal Temperature. For three months we have been experimenting with the grip and have been trying to settle the question which was the stronger of the two: at the present writing we must be declared the winner. During much of this time we have been experiencing all the exhilerating feelings which accompany convalescence from this malady and have also noted some quite unusual occurrences. One of these was a subnormal temperature. This would not be noted here were it not for the fact that Dr. W. R. Chittick of Detroit, has recently given a paper to the *Physician and Surgeon* on this same subject. He says that for two years he has noticed the frequent occurrence of subnormal temperature in his hospital patients. Thus far no attempt has been made to study this condition which has been supposed to be associated almost exclusively with local complications, as hemorrhage in typhoid, etc. In our own case the morning temperature was 97 or 97½, the pendulum swinging to 100 in the evening, and this weeks after all acute symptoms had disappeared. Dr. Chittick says he believes that the normal temperature will some day be placed considerably lower than it now is. He has found that in his own case, when in the best of health, his temperature is frequently below the accepted standard. Once at four p. m. he discovered he had a temperature of 96½, and he often found it, in the early morning, between 97½ and 98½. Another physician says that when convalescing from a severe illness, and when the temperature in the mouth was normal, that in the axilla was always 96. Dr. Chittick concludes his interesting paper by saying that he believes in the days to come physicians will not pay so much attention to a subnormal temperature, at least it will not be regarded in the light of a serious matter.

Points in Treatment of Children's Diseases. Dr. Edward P. Davis writes to the *Philadelphia Polyclinic* as follows:

Barley water is prepared by adding one tablespoonful of barley grains to one pint of scalding hot water, allowing it to stand and then straining; it is a valuable addition to the diet, exerting an astringent action on the bowel in case of diarrhœa.

Oatmeal water is prepared by the addition of one tablespoonful of oatmeal to the pint of scalding water, allowing it to stand; strained and administered, it exerts a laxative action.

If the child vomits, is feverish and has frequent stools, the milk should be

stopped altogether for twenty-four to thirty-six hours and albumen water substituted.

Albumen water is prepared by adding the white of one raw egg to eight ounces of water; in addition the child should get light chicken or mutton broths or freshly extracted beef juice.

Brandy and water form a good stimulant and may be administered in ten-drop doses six or eight times a day. The administration of a dose of castor oil, guarded by some brandy to prevent griping, is of excellent value to clean out the irritating material from the intestines. Lavage of the intestines is of first importance in intestinal infantile disorders. It is usually accomplished by the use of a No. 11 or 12 soft rubber catheter and a fountain syringe with one or two quarts of warm water. The best result is obtained if the infant is placed on its abdomen across the nurse's knee, the water being at a temperature of 100° F., and a little soda or salt added to it. Great relief is obtained from the evacuation of the flatus and fæces. In chronic cases some antiseptic and astringent must be added to the water, thus:

Boric Acid, 1-2 ounce to the quart.
Creolin, 30 drops to the quart.
Sodium salicyate; 10 gr. to the quart.
Thymol, 1 part in 2,000.
Mercuric chloride, 1 part in 10,000.

The use of the solution of mercuric chloride should be followed by irrigation with warm water; this irrigation of the intestines not only removes the flatus and fæces, but exerts a stimulant action upon the bowel.

To Collect Human Saliva. Quoting from a foreign exchange, the *New York Medical Journal* gives a most ingenious method for collecting a large quantity of human saliva. The author says that in order to obtain a sufficient quantity of human saliva when the question of the sialagogue value of certain medicaments is to be studied, it is well to have the person chew a fine sponge of about the size of a hen's egg, which has previously been well dried.

If the person who undertakes to do this is careful not to press the sponge between the tongue and the roof of the mouth, the sponge will rapidly become saturated with saliva, which is then squeezed into a vase, and the sponge again placed in the mouth. The procedure is not at all fatiguing to the individuals, and it enables the experimenter to obtain rapidly a considerable quantity of saliva. The same sponge may be used several times, provided it is boiled after each experiment and kept in a three per cent solution of hydrochloric acid.

Mouth-Breathing and Cyclists. Dr. John O. Roe of Rochester, N. Y., has recently said that the evil effects of mouth-breathing are not confined to cyclists, but are equally injurious to all who from carelessness or from necessity, by reason of the nostrils being narrowed or obstructed by diseased conditions, it becomes a habit or practice. When this condition of mouth-breathing exists, however, the inhalation of a large amount of air, which is necessitated when active exercise is participated in, as in wheeling, accentuates the ill effect of this perverted respiration, and to a great degree lessens the benefits derived from this splendid exercise. Likewise, and as the natural means of affording relief from these more or less dangerous consequences, there is emphasized the importance of giving proper attention to the nasal passages and rendering them free and unobstructed.

Respirators worn over the mouth, so often recommended a few years ago to patients suffering from throat and chest affections, have been abandoned since the functions of nature's respirator, the nose, have been more fully understood.

It is also a well-known fact that the endurance of athletes or persons engaged in any active exercise, other things being equal, is proportionate to the freedom of respiration through the nose and the proper oxygenation of the blood.

The reason that we direct our warning especially to cyclists is that cycling is so nearly universal at the present time as to render it the principal mode by which exercise is taken, and, therefore, the ill effects of mouth-breathing are most often noticed among wheelmen. It is estimated that four hundred thousand in Great Britian and over a million in this country participate in cycling. The larger the number, the more urgent becomes our duty to warn them of the evil consequences of mouth-breathing, and to teach them the importance of obeying Catlin's injunction, Shut your mouth and save your life!

The Effects of Tobacco.

When we are personally fond of some food it is quite easy to be convinced that such an article of diet is especially useful to our condition. In the case of luxuries this is all the more pronounced. "Tobacco does me so much good", is the statement emanating from those who are fond of it. Just here we might give the recent opinion of the editor of the *Medical Record:*

"Of the various forms of using tobacco, cigarette smoking and chewing are the most harmful, and doubtless are the cause of many functional derangements. Laryngitis, pharyngitis and nervous irritability may also often be laid at the door of the soothing weed. In phthisis, although it does not set up the disease, it aggravates it. Thus it may be laid down as a rule that smoking to excess is always more or less harmful, and that smoking by the young is in every case to be reprobated. It is more than likely that an excessive use of tobacco does occasionally deteriorate the moral character—in the same way as chloral or bromide of potassium may deprave the mind—by lowering the tone of certain of the nerve centres, by narcotizing them and impairing their nutrition. Tobacco is not of much therapeutic value, on account of the difficulty in obtaining it in uniform strength, although its antiseptic qualities are lauded by many."

Mosquitoes Bothering an Elephant.

Dr. Lanphear of St. Louis, says: "Some malicious individual of this city has been industriously circulating the report that all of the cases operated upon at the St. Louis hospitals by the distinguished Dr. Joseph Price, at the late meeting of the Tri-State Medical Society, terminated fatally. Such is not the case—every patient has recovered or is convalescent; there was not even a single bad symptom in either of the women. I cannot understand why any doctor should wilfully tell such a monstrous lie, and especially against a gentleman who was not only the guest of the medical profession of St. Louis, but who is today without question the most successful abdominal surgeon in the world. All prevarication it seems cannot be ascribed to 'local jealousy'. It must be the climate!"

The *Laryngoscope* says that the meeting of the American Laryngological Association, recently held in this city, was somewhat disappointing in some respects. "To an association which has among its members many of the most prominent laryngologists in America, and whose age and experience should give it especial advantage, we naturally look for conspicuous results, which can scarcely be said of the meeting which has just been completed." This journal speaks highly however of the papers presented by our local men.

THERAPEUTIC SUGGESTIONS.

"*The Record*" says that when calomel is given we should avoid acid, salty or richly albuminous food.

"There is no single drug employed in nervous diseases with effects so markedly beneficial as those of cod-liver oil."

Nitro-glycerine has but little power over the pains of aneurism; it acts best in the angio-spastic forms of angina pectoris.

For neuralgia of the fifth nerve butyl-chloral is superior to chloral; although as a simple hypnotic for general use it is not so efficacious.

"*The Archives of Pediatrics*" says that castor oil can be made both tasteless and odorless by thoroughly shaking it in a flask of warm milk.

Picric acid dressings, 5 to 1,000, promote the healing of burns better than any other means of treatment, while it calms the pains almost instantly.

A French physician reports three cases of obstinate chronic sciatica cured by giving forty to fifty drops of copaiba a day, divided into several doses.

Aristol is declared by a competent authority to be far superior to iodoform in the treatment of indolent ulcers and in many diseases of the ear, nose and throat.

Chiam turpentine is recommended in every form of internal hæmorrhage. A writer in the "*Indian Medical Record*" says that it is successful even where ergotin has failed.

Prof. Geo. H. Butler of Chicago, says that "cod-liver oil is one of the best remedies in Bright's disease, associated with anæmia and unattended by marked digestive disturbances."

For chronic ache a recent author advocates the incision of each vesicle or purtule with the fine point of a knife and then placing a drop of hydrogen dioxide in the cavity.

Another remedy for sciatica is to inject near the nerve and deep in the muscle, from one to four c.c.m. of a solution of five grams of glycero-phosphate of sodium in twenty grains of distilled water.

A French medical journal says that tobacco does not affect a normal nervous system, or at least to only a trifling extent, but as soon as this system is impaired in any way its effect is than extremely and progressively pernicious.

An exchange says that when the mescal button becomes better known and when it can be more easily procured there is danger that it will form a drug habit even more alarming than that of cocaine or morphine.

A Russian marine surgeon says that applications of compresses dipped in a chemically pure solution of bicarbonate of soda, of the strength of two per cent, arrests the production of pus and stops inflammation far more rapidly than any known antiseptics.

In a case of angina pectoris recently reported, after inhalations of nitrite of amyl, large doses of morphine and nitroglycerine had failed and after nothing but chloroform to the point of insensibility would give relief, the author found that a hyperdermic injection of 1-75 of a grain of hyoscine hydrobromate was eminently successful, giving complete relief in fifteen minutes. This dose was rather large for a beginning, but the case was a desperate one.—*Practical Medicine.*

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M.D.

OBSTETRICAL WORK OF COLUMBIA HOSPITAL.

DISCUSSION.

Dr. J. Taber Johnson said: The report shows nearly 300 cases delivered, with a mortality of only seven-tenths of one per cent. I think that we ought to congratulate the city of Washington, Dr. Fry and the Columbia Hospital on this splendid showing, for Columbia Hospital is receiving a class of cases very different from those received in other obstetrical hospitals. I read a short time ago a report of the Preston Retreat in Philadelphia, where Dr. Price reports 1,000 cases without a death. That institution shows a mortality of six-tenths of one per cent, but the Preston Retreat receives only respectable married women (a marriage certificate being requisite for admission), and they are women in much better hygienic and social conditions than those admitted to Columbia.

I am glad to see that Dr. Fry has lessened the amount of local attention which he gives his patients, and I think one reason why his mortality is so low is on that account. The conviction has been growing on me for several years that the method of treatment first suggested and put into practice in this country by Garrigues, the treatment by intra-uterine douches, etc., has been very much overdone. Garrigues reports that within his knowledge there have been sixteen deaths due to poisoning by the absorption of the bichloride injections. He, in conjunction with other men who have studied this question carefully, are returning to the simplest possible methods of dealing with puerperal cases. They have dispensed with all unnecessary douches, and realizing that every thing introduced into the vagina is capable of carrying infection, they are introducing just as few elements of danger as possible. It is believed that much harm is done by what might now be called this form of meddlesome midwifery. It is likely that a number of these women referred to by Dr. Fry would have lost their lives if they had not gone to the hospital. The modern antiseptic management of obstetrical cases in a clean hospital environment seems to show a less mortality than occurs in the average private practice and for obvious reasons, skilled nursing facilities. The management of puerperal eclampsia by the withdrawal of blood one hour and the introduction of normal salt solution an hour later, may at first sight, appear somewhat incomprehensible. Whether this method of treating convulsions will ever come into vogue as a regular routine practice cannot yet be said, but reports of such cases are of great value to the profession and to suffering women, presenting, as it does, another method of treating such cases.

Dr. H. D. Fry, in closing the discussion, said: Some months age I brought up before the Society the subject of puerperal malarial fever and reported a number of cases. I stated that in Columbia Hospital we had met with several cases showing more or less malarial infection. At the time I read this paper

the percentage of cases occuring in Columbia Hospital was eighteen, but by the admission of new cases since cold weather set in and the consequent reduction in the number of cases of malaria the percentage has been reduced to twelve. The only explanation I can offer is that the women are subject to malarial influences, but that the disease does not develop until after the birth of the child when the vital powers of resistance are weakened. In all these cases the disease was mild in form, and readily yielded to quinine in a few days. In several of them the *plasmodium malariæ* was found in the blood. My chief hope in taking up the subject of antiseptic midwifery was to do away with the douche. In a normal case of labor I cannot see any more reason for giving douches than for the surgeon, after opening the abdomen, to touch his dressings. It is just as sensible to remove the dressings three or four times a day after an operation as to give douches every few hours after normal labor. The first thing I did, when I took up the work at Columbia Hospital was to stop the use of douches which I found they were in the habit of giving before and after labor up to that time.

MEETING OF FEBRUARY 10, 1897

Dr. S. C. Busey, President, in the Chair.

Erythromelalgia (Mitchell).

Dr. D. W. Prentiss gave the following history of two cases of erythromelalgia:

The patient in the first case was brought before the Society for examination.

I. Mrs. C., aged fifty-eight years, neurotic diathesis, but has kept up and worked hard in household duties keeping a summer hotel. Disease first began in August, 1895, with burning pain in the first finger of the left hand and continued for two weeks. In the autumn of 1896 it extended to the second and third fingers and finally to the thumb. The pain is of a severe burning character lasting for days together with remissions, but not entirely absent during an attack. The character of the pain during an exacerbation is of a severe burning nature and paroxysmal. The attacks were recurrent from three to six weeks apart, and lasting about two weeks. She had typhoid fever thirty years ago. No history of malaria or specific disease.

October 31, 1896, she came under my care with the above symptoms. Pain very severe, most so in the thumb and ends of first and second fingers, which were purplish in hue and swollen. Her general health was impaired; heart's action weak, otherwise normal; nervous and slept badly on account of pain. No dizziness but occasional difficulty in walking (ataxia), knee jerk normal.

Dyspeptic symptoms marked and aside from the pain in the hand, was the condition especially calling for treatment. The character of the indigestion is that form common in neurasthesia from innervation, not from organic disease.

Treatment for relief of pain:

℞	Phenacetin	2.00
	Caffein	1.00

In ten capsules. Two every hour until relieved or until six are taken; usually one dose gave partial relief. She was given nitro-glycerine one and a half milligrams, three times a day, with tonics and bismuth and carefully regulated diet.

After two weeks of this treatment without benefit, galvanism was, from the hand to the back of the neck, given daily, for three minutes, the positive pole in the hand.

This was continued for a month with the nitro-glycerine and tonics without relief. The galvanism was then stopped for awhile, but the pain growing worse, it was again resorted to. The relief afforded was however nothing to boast of, though it appeared to be the treatment

that offered the best hope of good result. Nitro-glycerine ordered to strengthen the action of the weak heart and stimulate freer passage of blood through the capillaries; also electricity, the galvanic current, to relieve pain in the hand and relax spasm.

II. Mrs. A., widow, aged thirty-seven years; a neurasthenic with severe dyspeptic symptoms; no constitutional taint as far as known; no history of malaria.

Pain in the heels began four years ago and has recurred at intervals of three or four months, the attacks lasting two or three weeks. During the interval she is comparatively free from pain. The paroxysms are brought on by physical exhaustion or any kind of strain to the nervous system, especially if obliged to stand or walk more than usual, as on one occasion when called upon to nurse her mother during a protracted illness.

The pain began as a dull ache in the heels with a burning sensation; at first with a feeling as of pebbles under the heels. As the attack progresses, the burning increases and extends to the soles of the feet and up the calves of the legs. When the pain becomes severe, the heels are red and swollen and shoes cannot be worn. A peculiar sensation extends to the head with restlessness and hysterical symptoms and a disposition to scream.

She is drowsy and dizzy much of the time and frequently shows an ataxic gait. When asked as to the severity of the pain said, "It was so bad she just could not stand it another minute."

Treatment has been directed to the general condition—the dyspepsia and neurasthenic symptoms. She has an idiosyncrasy against strychnia, the latter causing dizziness and vertigo.

Erythromelalgia is fortunately a rare disease, and from present knowledge is not amenable to treatment. In the first case, here reported, stretching of the nerves of the forearm will be recommended if it is not speedily relieved.

DISCUSSION.

Dr. Rupert Norton said: The case of erythromelalgia presented by Dr. Prentiss is a very interesting one. My own interest in it lies in the consideration of its pathology. Two Germans, who are always foremost in the consideration of such cases, discussed this question in papers written in 1894. They connect this disease more closely with Raynaud's disease than Dr. Prentiss does, and it certainly does look like that disease before it goes on to gangrene. It also resembles scleroderma very much before the skin begins to harden. It also re sembles somewhat a curious condition, sometimes noticed in John Hopkins Hospital, called "tender toes", which occasionally occurred in typhoid fever patients after tubbing, and which resembled acute rheumatism. The toes became so tender that they could not bear the least covering over them. The pain would last two or three days, and then subside if no baths were given. It seldom comes on while the bath is being given.

Dr. D. W. Prentiss, in closing the discussion, said: I have a book here with Dr. Mitchell's article on erythromelalgia, which gives several plates showing the area of pain in this disease. Dr. Osler considers that a number of the cases reported by Weir Mitchell were really cases of Raynaud's disease, but, judging from the description which Weir Mitchell gave of his cases, I can see no resemblance in them to that disease. The element of pain is not especially mentioned in Raynaud's disease, while in this condition it is the principal feature. In this disease, also, instead of a cutting off of the blood supply, as in Raynaud's disease, there is an increase of blood, as is shown by the congestion of the parts, the skin becoming a dusky, mottled red. In the cases reported by Mitchell, which were followed up for a number of years, there was no development of gangrene or other symptoms resembling Raynaud's disease. The pain in erythromelalgia is not constant, some-

times getting better and sometimes worse. As regards the pathology of Raynaud's disease, it is characterized by spasm of the arterioles, thus shutting off the blood supply and causing a paleness of the integument. while in erythromelalgia there is redness. In acromegaly there is an enlargement of the hands and feet, while in none of the cases reported by Mitchell and others was there any enlargement of the members, nor thickening of the skin. Erythromelalgia is not sufficiently well known as yet for us to form any idea of its pathology. As regards the treatment, none has yet been found that will afford any but temporary relief.

I. Extensive Penetrating Wound of the Cornea.

Dr. Swan M. Burnett read the following reports and exhibited the patients:

The patient presented was a man of forty, a laborer at the new library building, who was struck on the right eye by a piece of steel, while holding a bar of iron in front of another man who was working on it with a cold chisel. He was seen within an hour after the injury. The wound extended across the cornea at its lower third and reached the sclera at either end. It was removed only by great effort with a pair of toothed-forceps. It was found to be nearly a half centimeter in width and extended across the anterior chamber and through the iris. The iris prolapsed after the removal of the steel and a portion had to be excised. The operation was done, after a thorough cleansing of the eye, with an antiseptic solution. The case progressed well with only a moderate amount of reaction and now some eight weeks after the injury the lens is still clear and there is vision of five-twenty-fifths. There is considerable corneal opacity, as a result of the wound.

II. Removal of an ounce Bullet which had remained embedded in the Temporal Fossa for thirty-four years.

This man is an old confederate soldier who, at the battle of Gettysburg, was wounded in the right shoulder and on the right eye brow. The latter was considered by him and the surgeon of comparatively little importance, though the right eye was blind from the time of injury. A small fistula has remained on the outer edge of the brow ever since and he has complained much of headache. In 1890 this eye became red and painful and as it was sightless I advised him to have it removed, thinking we might find some cause for the fistula in the back of the orbit. This was done but nothing was found in the orbit. A year later I explored the fistula, running up on the frontal bone and discovered some soft necrosed bone, but found nothing more. One month ago he came up to have something done for the relief of his headache. I continued to search until something was found as a cause for the continuance of the trouble. At last it was discovered to be a minie bullet, much elongated and of very irregular contour, which was embedded in sound bone in the temporal fossa, but having no connection with the fistula. It had been supposed by himself and all the surgeons who had examined him that the wound had been produced by a piece of shell. The ball was firmly fixed as if an osteitis of a low form had occurred filling in all the irregularity of the surface, and it was necessary to chisel a channel all around the ball before it could be pried out. This left a large cavity for the ball was sunk nearly a centimeter in the bone. The cavity was packed with iodoform gauze and redressed regularly. Now the healing is almost complete. There has been no rise of temperature since the operation

and his head symptoms are vastly relieved.

DISCUSSION.

Dr. C. H. A. Kleinschmidt said: I saw this case of gun shot wound of the orbit some years ago and referred it to Dr. Burnett. I always told the gentleman that the injury was caused by a bullet wound and not by a fragment of the shell. A bullet wound leaves scarcely any trace, while a shell would leave a bad scar. I advised him to go to Dr. Burnett on account of the general condition of the eye, and in hopes that he would find the bullet, as he has done.

NECROSIS OF THE TIBIA; REMOVAL AND RESTORATION OF THE BONE.

Dr. Geo. N. Perry reported the following case and exhibited the specimen:

The primary injury in the patient was apparently a trifling one and was received in 1850. A large abscess appeared in the leg within two weeks; this was opened by Drs. Groot and Sprague of Falls Church, Va. In 1852 Drs. Hall, May, Miller and Stone removed a large piece of bone. In 1858 Dr. Richards removed a piece from the upper third. In 1885 Drs. Thompson and Adams removed a large part of the tibia in Garfield hospital. It was amputated in November, 1896, by Drs. Graham, Balloch, Jenner and myself. The wound never healed but suppurated continuously for forty-six years. The bone removed was almost entirely reproduced; and it was found to have increased about one-half inch in length as compared with the fibula. It was also thicker and heavier than normal.

DISCUSSION.

Dr. S. S. Adams said: I may be able to add something to the history of this case. I have known Mr. B. since 1865, when he was believed to be suffering from white swelling. In 1886, I advised him to go to Garfield hospital, and I was present at the operation which Dr. Thompson performed. At that time there was no cicatrix on the leg to indicate that an operation of the magnitude described by Dr. Perry had ever been done. Before being put under the anæthetic he exacted a promise from me that, if possible, the leg would be saved. Dr. Thompson found the bone diseased almost from the knee down to the ankle, and wanted to amputate the leg at that time. He scraped away the tibia very thoroughly, and did not leave any of the bone but the ends. The periosteum was left. The impression at that time was that an amputation would have to be performed sometime, and Dr. Thompson did not think that with the amount of destruction which existed that there would be any repair.

Dr. Perry, in closing the discussion, said: The history I have given was obtained from the patient. The fragment removed by Dr. Miller in 1852 must have been quite large; it was very irregular in shape, dark, quite full of holes and about ten inches long.

HARELIP COMPLICATED WITH INTERMAXILLARY FISSURE. OPERATION.

Dr. A. R. Shands presented the history and photograph of a case of single harelip, with fissure of superior maxillary bone at right intermaxillary junction, in a boy thirteen years old. The photograph illustrated the depth of the bony fissure which is bounded by the first molar on the right and the right central incisor on the left, extending to junction of the superior maxilla with palate and nasal bone in the shape of an inverted V and about one inch in length. As a result the alveolar arch had grown upwards at an angle of about forty-five degrees from the first left bicuspid pressing the nose to the left, the right bicuspids were absent and the central incissors poorly developed, and the latter failed to approximate with their fellows in the inferior maxilla by about one inch and one-half inch respectively. The operation for the relief of the deformity was quite satisfactory, but a plate with

false teeth to replace the missing teeth is needed to improve the patients mouth for mastication and would also have a cosmetic effect by holding the lip up, which is slightly depresssd on the right side.

SCURVY AND RICKETS IN CHILDREN.

By Rupert Norton, M. D.

Moller in 1858 first reported a case of scurvy in a child; but it was not until 1894 that the disease was fully described by Barlow, who more than anyone before him, has studied it in its relation to rickets. Since the appearance of Barlow's paper scurvy has been more carefully studied, and now the number of cases of scurvy on record is so large that it is possible to draw certain conclusions as to it, and its relation to rickets.

Much more has been written on the subject of rickets but the underlying causes of this disease are no better understood than they are in scurvy. Rickets is a much commoner disease, and there are few of us who have not seen it in childhood or its results in the adult. With scurvy the conditions are different; it is still rare in children, and may be often mistaken for other affections, and then again it leaves no marks to stamp the adult later. It is held by some authorities, that scurvy as seen in children and in adults is not the same disease, but I believe the disease to be one and the same at all ages; and that the differences noted in the symptoms are due simply to the differences in the physiological and anatomical conditions in the various stages of life, just as we find typhoid fever presenting two varied clinical pictures in children and adults. But whether scurvy as seen at various periods of life is one or more than one disease is of little consequence in the study of its relation to rickets. The essential question is whether rickets and scurvy are two entirely distinct and separate diseases as Barlow maintains, or whether they are closely and intimately related, as is the present view of a number of well known physicians both in this country and abroad. I have no intention in this paper of describing in exact detail the symptoms of these two diseases, but intend merely to discuss some of the points which seem to connect them as one disease, or others which tend to prove them to be two separate affections.

It is interesting to note that J. Lewis Smith believes rickets to be on the increase in this country and Henoch of Berlin, noted the same fact in regard to it in some of the large cities of Europe. If this is so the question must arise whether scurvy in children has or has not increased proportionately, and at present it is not possible to answer such a question. Where a disease is still so rare as scurvy, any statistics in regard to it must be taken with great precaution. Rickets in its milder forms is often hard to diagnose, as may be said of all affections in their mild forms, and this is still more true of scurvy. We have all of us seen so much rickets, in one form or another, among the negroes that we are on the lookout for it among them, but scurvy is not common in this race, and is seen more often in the well-to-do than in the poor, whereas with rickets the case is just the reverse. Now why should

this be the case if scurvy and rickets were allied conditions? There is no good explanation. If we assume that scurvy in children is probably in the great majority of cases due to the lack of breast milk, we find this same explanation used in regard to the increase of rickets. J. Lewis Smith in a paper in the *Medical News* for 1896 says: "I attribute the large increase of rhachitis in this country partly to the pauper immigration and partly to the extensive use of proprietary foods, without any, or with too little, milk." Why in one case rickets should follow the absence of proper food and in another case scurvy is as yet quite inexplicable, and if a lack of proper food is the common cause of both these diseases, why should we find rickets more common in the poorer classes and scurvy in the well-to-do? Bad hygienic conditions undoubtedly play a part in reducing the normal resistance of a child to all diseases, but this can hardly be the condition which is the ultimate cause in producing rickets in the children of immigrants, especially Italians, and negroes. On the other hand rickets is never seen among the Japanese, and it is well known that in Japan infants are always brought up on the breast, and are sucked for several years even up to the age of five.

Scurvy may follow rickets, or may occur in children who are not rhachitic, and still more seldom the first appearances of rickets may be seen some time after a child has had an attack of scurvy. The first condition is the more common one, that is a child with symptoms of rickets, develops later those of scurvy, and it is this fact which has led so many observers to believe that the two diseases were closely allied, that scurvy was so to speak only an added symptom in the worst cases of rickets. The personal coefficient is so great in any disease and at present so little understood that we must never forget to consider it in the study of diseases. It is largely a question of heredity, one of the great unsolved problems. And yet in many of the more complex problems of medicine we are obliged to fall back upon one or the other of these two explanations, that is, we attribute some conditions either to heredity or to personal idiosyncracy. Is it a personal idiosyncracy in the anatomical and physiological development that causes scurvy to occur in one child and not in another, or does antecedent rickets play an important part in the secondary appearance of scurvy? It seems highly probable that rickets might produce alterations which would lead more readily to an attack of scurvy later, but why then should scurvy be more common among the richer classes than among the poorer. Scurvy is supposed to be on the increase among the children of rich parents, because mothers are so unwilling to nurse their own infants, who are usually brought up on proprietary foods. These proprietary foods are believed to be the ultimate cause of scurvy, since with very rare exceptions scurvy has never been seen to develop in a child brought up on the breast milk.

Another very interesting question is why scurvy is not super-implanted on other diseases besides rickets. We do not find it associated with tuberculosis or any other disease of infancy. Scurvy is most common between the ninth and eighteenth or twentieth months, and is usually seen in feeble children, though as Barlow says it is not a sign of marasmus. After the second year scurvy becomes less common, the cases have been noted at almost all ages, and at the same time more closely assumes the characteristics seen in a typical case in an adult. Many diseases of infants are short and acute, and this may account in part for

scurvy not being associated more commonly with acute affections, which do not enfeeble the child severely. With the chronic intestinal troubles we might expect to see scurvy associated, but such is not the case, nor are there instances of its occurring with tuberculosis or syphilis. We may have hemorrages in infantile syphilis, but they are not in any way due to scurvy. Thus we see it either alone or in association with rickets. Scurvy as we see it in the adult usually occurs in an epidemic form, but in infants, it may be said to be invariably sporadic. Infantile scurvy is rare in Russia, where adult scurvy and rickets are not infrequent. Such facts as these and also those relating to the differences in the infantile and adult forms of scurvy, have led many observers to believe that infantile scurvy or Barlow's disease and epidemic scurvy are two essentially different maladies.

Starr, in the *American Journal of Medical Sciences,* for December. 1895, reported a case where scurvy was apparently the result of the use of sterilized milk in an infant. When we stop however to consider the enormous number of children who are annually brought up on one form or another of sterilized milk without the appearance of scurvy it must make us hesitate before we assume such milk to have been the ultimate cause of scurvy in this case. According to Cantani the main symptoms are due to the lack of the mineral salts, especially calcic phosphate and phosphoric acid. Lack of fresh vegetables has also been assigned as a cause of this affection, but then most children are supposed to get along well without these at least during the first year. Many proprietary foods also have been thought to give rise to scurvy, but here again we strike the same stumbling block as in the case of sterilized milk, that thousands of infants brought up on them do not suffer from scurvy in any form. We do not know what it is in these foods which may give rise to scurvy, but we do know that breast fed children practically never suffer from this disease, and therefore it is our duty to see that all children, as far as possible, are brought up on breast milk.

It has been thought that the so-called cases of "acute rickets" were cases of rickets associated in their development with scurvy, and that in these cases where pain was pronounced it was due to subperiosteal hemorrhages, one of the most marked symptoms of scurvy. But the very existence of "acute" rickets is questioned by leading childrens' physicians; and others believe that rickets and hemorrhages may be associated without the case being one of infantile scurvy. Ashby, writing "On the Aetiology of the so-called Scurvy Rickets" in the *Practitioner* for 1894, says that, "the hemorrhagic diathesis is simply an exaggeration or an excessive form of the anæmia which is always present in severe or acute rickets", and does not believe that "the anæmic and hemorrhagic condition which at times accompanies rickets is the result of the child having been fed upon a diet from which fresh food has been excluded, and is indeed true scurvy."

Furst, in an excellent paper in the *Berlin Klinische Wochenschrift,* for May 6, 1895, thinks that the present tendency is to bring Barlow's disease into union with rhachitis and more especially because of the following reasons:

1. On account of the similarity of age at which the two diseases occur.

2. On account of the post mortem findings.

3. On account of the regularity in finding rhachitic changes in those cases which have died from scurvy.

4. On account of the pain in early rhachitis.

As opposed to this series of conditions, he tabulates the following facts for support of the opposite view, which is that scurvy and rickets are two distinct affections. They are as follows:

1. Some cases show no signs of rhachitis.

2. Barlow's disease is rare, and rickets common.

3. Swellings of soft parts and bleedings are rare in rickets;

4. The cachexia and anæmia are never so severe in rickets; and

5. An anti-rhachitic diet is best in Barlow's disease.

There are two pronounced schools, with good men belonging to both, and it seems as though up to the present time we did not have enough evidence to prove or controvert positively either view. Barlow, who may be said to be "the" author on infantile scurvy says: "It is clear that the phenomena of our disease, and those of rickets, as commonly understood, though often coexistent do not present what logical writers describe as concomitant variations"; and in another place adds "rickets *per se*, as I have already said, does not (as far as experience goes) lead to these hemorrhages. . . . . If then in our infantile cases the blood change due to scurvy comes into operation, the rickety change already present may act as a physiological determinant of the sites in which scurvy becomes manifest."

I have perhaps left the most interesting point in this paper till the last and that is the hemorrhagic diathesis as seen in scurvy. There are two ways in which hemorrhage may occur in the tissues—by diapedesis and by rhexis. The smaller escapes of blood such as are seen in purpuric spots, in petechiæ, or in small ecchymoses are usually the result of diapedesis. In scurvy it is probable that the effusions of blood may occur in both ways, though usually by shexis since the hemorrhages are apt to be large. This rhexis is believed to occur only in the venules, since the resistance of the arterioles is very great. But in saying that the hemorrhages are a result of rhexis in the venules we have not solved the problem, since we do not know or cannot explain what the cause of the rhexis is. It probably varies in different conditions; in so-called "bleeders" there is evidently some hereditary disease of the vessels themselves; in other conditions it has been thought that the hemorrhages were due to capillary thromboses, which have been found in a number of instances, though by no means in all where they have been looked for and expected. Various blood conditions, such as thinning of the blood, diminution of the fibrin, or of the red blood cells have all been used as possible explanations of the bleeding in scurvy, but none of them are sufficient. It has been thought that the abnormal composition of the blood led to poor nourishment of the system, and so to a general brittleness of the vessel walls; this and other suggestions such as a diffuse capillary phlebitis have all been offered as explanations, but they are mere theories which up to the present time lack definite proof. We cannot explain the cause of scurvy, of course a bacterial origin has been thought of, but there is no confirmatory evidence. It has been proved that albumen will escape more readily into the urine when the blood increases in acidity, and so it seems quite probable that chemical alterations in the blood might affect the vessel walls in such a manner as to cause free escape of blood into the surrounding tissues. The fact also, that the disease seems to be due to malnutri-

tion would lead us to look at its results as a cause of chemical changes. The ease with which cases which have not progressed too far recover under proper hygienic conditions and the use of breast milk might also fairly lead us to infer that the disease was probably not one of bacterial origin.

I have not intended in this paper to do more than bring up some of the more recent ideas in regard to the relationship of these two diseases. Accurate descriptions of the two maladies are to be found in all the modern text-books on medicine, and the symptomatology and treatment in any marked case may be said to be easy; but we should go farther and look for the remoter causes and try to find true explanations for the many points of interest which arise in connection with such a disease.

DISCUSSION.

Dr. D. S. Lamb said: It is generally conceded that the pathological condition in rickets is that of a want of calcification. The bones develop as cartilage, and the medullary cavity is duly formed. The presence of so much cartilage is then considered to be due to failure to calcify, and we have a soft, so-called osteoid tissue. It is also generally stated that there is an increased activity in cartilage growth, and that the bulging or beading or nodes in the epiphyseal line is due to such increased activity in formation of cartilage cells. But it is also held (and this is the point I want to make) that this bulging or beading is not due to increased cartilage formation, but to the traction of the muscles combined with the pressure at the joints. This may be therapeutically a matter of some importance.

Dr. S. S. Adams said: I have seen a great many cases of rickets, but only one case of scurvy in children. Just as I have said on previous occasions that there is no direct connection between rheumatism and chorea, so I think there is no direct relation between rickets and scurvy. That scurvy occurs entirely among the children of well to do parents is probably due to the fact that they are fed on artificial food more frequently than the children of poorer parents. Those children who suffer from rickets are also fed on improper food, but there is this difference, that those fed on proprietary foods get a superabundance of soluble and insoluble products (such as starch), while in rickets the child does not get these, but depends on nitrogenous substances, articles not found in proprietary foods. It is a remarkable fact that almost all the cases of infantile scurvy occurring in the United States can be traced to the use of one particular article of artificial food. Rachitic children as a rule, are not fed on proprietary foods, may not be nourished by the mother or wet nurse, but are usually fed at the table on broths or fat meat. We should take for our starting point the fact that the first food of the young of mammals is of an animal nature, and in our direction of infantile dietetics we should endeavor to imitate Nature's plan. In my case of scurvy the child was fed on malted milk, and here the picture was entirely different from that presented by rickets. The child was believed to have rheumatism, on account of the severe pain from which it suffered. I ordered modified cow's milk and orange juice, and in less than a week the pain was arrested and the child began to improve. The blood was examined in this case, but I regret to say that the record was not preserved.

Dr. C. H. A. Kleinschmidt said: The question of the causation of rickets is one of nutrition, a very doubtful point in physiology, for it brings us down to a question of chemistry, and we know absolutely nothing about the chemistry of the living body, all our knowledge having been obtained from a study of the dead body. So it is very difficult to say what happens and what does not happen in the living body. Dr. Adams says that rickets is a matter of food, but he leaves out one of the most important articles of food, the inorganic salts. A certain amount of lime is required, and milk contains precisely the amount needed assisted with organic principles. The question is, how shall we get it?

Artificial foods do not contain lime, in organic combination, and it is absolutely useless to give lime salts, as such they must be given in organic conbination. I do not believe that rickets and scurvy are the same disease; they both are due to malnutrition, but in the one case nutrition is at fault in one direction, and the other in another, in scurvy there seems to be a lack of something. that can only be supplied by good vegetables, lemon or orange juice, in rickets the something lacking causes failure of ossification.

Dr. Geo. M. Kober said: Dr. Kleinschmidt touches the key note of the subject when he says that rickets is a question of nutrition, and this is also true as regards scurvy. These diseases are dependent upon chemical alteration of the blood, in the amount of organic and inorganic constituents. The cases of infantile scurvy reported as following the use of sterilized milk were not due to the fact that the milk was sterilized, but that the composition of the milk, especially as regards the mineral salts, was probably at fault. That mineral and organic salts have an important bearing on the production of rickets and scurvy is shown by experiments on animals and by the fact that when soldiers and sailors are without fresh vegetables and largely fed with salt meat, it is often followed by an outbreak of scurvy. This shows that an excess of sodium chloride and a deficiency of other salts may produce the disease in the adult, and I can see no reason why a similar cause may not produce scurvy in infants.

MEETING OF FEBRUARY 17, 1897.

Dr. S. C. Busey, President, in the Chair.

The Board of Censors reported favorably on the application of Dr. William R. Hall, U. S. A., as a member by invitation, and he was unanimously elected.

The President, as chairman of the committee on legislation, reported that the committee was in favor of cooperating with the several State Medical Societies in the establishment of a committee on legislation composed of delegates from the several State Medical Societies to meet annually in Washington during the session of Congress.

Ulceration of the Bowel with Constipation, etc.

Dr. E. L. Morgan read the history of a case, the lesion of which was found by Dr. Lamb at the autopsy, to consist in broad, ragged ulcers in the ascending and transverse colon, penetrating in places to the peritoneum. The appendix contained fecal masses.

There was no hemorrhage from the bowels or diarrhœa; the symptoms were nausea, vomiting, great pain in the epigastrium, and constipation, with variable fever, weakness, restlessness and occasional convulsions.

AXIS TRACTION.

By B. G. Pool, M. D.

The author quoted a number of authorities to show the wide difference of opinion which existed on the subject of axis traction. He attempted to demonstrate by diagram that traction made in a direct line from the centre of the superior strait to the centre of the pelvic outlet would be at an angle of twenty degrees to the direction in which traction should be made and that when the head reached the level of the subpubic ligament this error would be doubled, or forty degrees. He then presented a diagram of the planes of the pelvis with

forceps applied and showing how in his opinion the usual devices failed to meet the mathematical requirements.

He asserted that in order to apply force in any direction at the distal end of a tractor it was only necessary to describe the arc of a circle, with the distance from the centre of the object to be moved to the point of attachment for a radius.

To practically apply these principles he attaches to the ordinary forceps diverting handles, which are arcs of a circle with the child's head as a centre and the distance from the centre of the childs head and their point of attachment as the radius. They are attached by simply slipping a slot over the handles of the forceps. These handles if extended beyond the point under the lock of the forceps (which is not necessary but to make them theoretically complete), should cross at this point and be united by a pivot parallel with the screw of the lock.

He claimed that by this means the sentient guiding hand is more directly employed than by the usual mechanical devices; that the lateral movement of the forceps is not interferred with and that they allow us to take cognizance of rotation movements, and that they are not as apt to slip without the accoucheur knowing it. Time is also saved in their introduction. The modification cannot be said to be more dangerous than the ordinary forceps. The instrument remains simple, handy, easy of introduction and management. It dispenses with the screw to prevent slipping. It remains a tractor, a lever and a compressor, according to the exercised traction and it enables the accoucheur to apply intelligent reasoning force instead of brute force.

DISCUSSION.

Dr. A. F. A. King said: Tarnier's orceps, with its modifications, is probably the best axis traction forceps made. But a device contrived by Dr. Reynolds which is applied to an ordinary pair of Hodge or Simpson forceps has most of the advantages of Tarnier's forceps, and is very much cheaper. We may not be able to indicate exactly with these tractors the direction in which traction should be applied, but it is infinitely better than the old plan of trying to pull downwards and push backwards at the same time, as used to be attempted before axis-traction devices had been invented. Simpson's forceps will never slip, and for that reason I have discarded Hodge's for Simpson's.

Dr. H. D. Fry said: The greatest improvement to the obstetric forceps, since the days of Smellie, is undoubtedly the application to them of the principle of axis traction, and we are indebted to Tarnier for an improvement which makes of the obstetric forceps an almost ideal instrument. It has facilitated the delivery of the head when high up in the pelvis by giving better direction to the head in its passage, and by the increased mobility of the head in the grasp of the instrument. The best instrument yet devised for this purpose I think is Tarnier's latest model. The use of traction rods produces a leverage motion, and in drawing too far forward the head will follow the course of least resistance. This fact has been recognized by the Germans in the Breus forceps. There are two objections to the instrument shown by Dr. Pool, and one to that of Dr. King.

First, Dr. Pool fails to take advantage of one great improvement of the Tarnier instrument. When the head is grasped by the blades of that instrument and traction made with the rods, a cradle movement is given to the head, and it advances where resistance is least. This mobility is of great advantage. By making traction with the instrument of Dr. Pool mobility is lost. Again, and this objection applies equally to the Reynolds' rods presented by Dr. King, force can be exerted downwards and backwards only when the blades of the instrument are applied to the lateral walls of the pelvis. If they should be applied in one of the oblique diameters

of the pelvis the traction will be downwards and to one side. Applied laterally the head is usually grasped with one blade over the side of the occiput and the other over the opposite eye. Movements of flexion, extension and rotation, are interfered with by such application.

In regard to the slipping of the forceps, it depends upon the method of application. The Hodge, White and French instruments are made to be placed upon the sides of the child's head, and when placed in that manner they will not slip. The Simpson instrument, on the other hand, is for application to the sides of the pelvis, irrespective of the position of the head, and that is why they hold better than the Hodge applied laterally.

Dr. T. C. Smith said: I cannot see in Dr. Pool's forceps what axis-traction merit it possesses. All axis traction forceps are made practically upon the principle of Tarnier's forceps, and the difference between the various makes is very slight. I have used and like Lusk's modification of Tarnier's forceps, and have been successful, except in a few cases.

Dr. Fry said: Poullet's tapes give the advantage of traction backward, and allow mobility of the head at the same time, but traction in the line of the pelvic inlet cannot be obtained as well as with the Tarnier's model; they are also liable to cut and injure the soft parts externally.

Dr. Pool said: That with a complicated instrument we fill up the vagina. As to mobility the fact that the instrument is not movable is one of the advantages I claim for it. With a rigid instrument you can tell in what direction the head is travelling, but if you have joints on the handle you cannot tell in what direction the traction is being made.

Formalinized Catgut.

Dr. I. S. Stone exhibited test tube bouillon cultures of formalin catgut. He declared that the actual results of its use verified the experiments made by Dr. Reed as shown in the letter which he read.

"I herewith submit the results of certain experimental observations which I have made during the past two weeks with the specimens of formalinized catgut, as requested by you. The specimens of catgut which had been subjected to five per cent formalin for a period of twenty-four hours, were divided into three classes:

1, That which was afterwards handled with soiled fingers.

2. That which had been boiled for two minutes, and wrapped in a small fragment of paper; whether the paper was sterile or not, I cannot say; and

3. That which was placed in absolute alcohol.

Sterile bouillon tubes were inoculated with each of these samples, and then placed in the thermostat at 37° C., and, in addition, several pieces of the catgut in absolute alcohol were transferred to sterile tubes which were inoculated with a culture of the staphylococcus pyogenes aureus. These last were kept at thermostat temperature for thirty-six hours, the object being to allow the staphylococcus to penetrate the catgut as much as possible. The tubes were then removed from the thermostat, their contents emptied into a vessel containing about three ounces of five per cent formalin, and there allowed to remain about twenty-eight hours. At the expiration of this time the several pieces of catgut were removed from the aureus-contaminated formalin solution, washed in sterilized water for a moment, and dropped into other sterilized tubes of bouillon. As the result of these experiments I have to report that:

Tubes No. 1 (four tubes), made from catgut soiled with the hands, all contain growth consisting of mould and other saprophitic organisms.

Tubes No. 2 (six tubes), which were removed with every other precaution

from the small fragment of paper in which they were wrapped, all contain growth except one.

Tubes No. 3 (four tubes), which were inoculated with catgut removed from the absolute alcohol, show in two a growth, and in two none. This growth in two of these tubes is explained by the fact, as noticed by me at the time, that upon attempting to remove the catgut in two instances the end of the fragment struck against the lip of the bottle in which it was contained, and hence it was expected that at least two of these tubes might show a growth.

Tubes No. 4 (seven tubes), which were inoculated with catgut removed from the absolute alcohol with every care, the lip of the bottle having been previously carefully wiped with a bichloride solution, show a growth in only one. This tube was purposely inoculated by me with staphylococcus aureus, in order to ascertain whether the amount of absolute alcohol carried over in the fragment of catgut would have any restraining effect upon the growth of any organism present.

Tubes No. 5 (five tubes) were inoculated with fragments of catgut which had been placed for thirty-six hours in cultures of staphylococcus aureus, and afterwards subjected for twenty-eight hours to five per cent formalin solution; none of these tubes show any growth.

In this connection I regret that the bouillon selected for tubes No. 5 was imperfectly filtered bouillon, contained in new glass tubes which were being used for the first time, and hence the appearance of the tubes would indicate on first view a growth. I have, however, carefully examined cover slips from each of these tubes without finding any organisms, and, not satisfied with this, I have made cultures from each of these tubes in other bouillon, with, in each case, negative results.

All tubes have remained in the thermostat for intervals varying from seven to fourteen days.

Very respectfully,

WALTER REED,

Surgeon U. S. Army,

and Curator Army Med. Museum.

DISCUSSION.

Dr. Wm. H. Forwood, U. S. A., said: The method recommended by Dr. Stone for sterilizing animal ligature is simple, practical and perfectly safe. Animal ligature can be sterilized in other ways equally as well. My own preference is to deoleate it in pure ether and then store in absolute alcohol with 1–1000 bichloride. The process may be supplemented by boiling for a few minutes on a sand bath and the addition of one per cent of trikresol.

Dr. Rudolph H. VonEzdorf said: I may be permitted to tell how I came to suggest formalin to Dr. Stone. I had tried every thing mentioned in the books for sterilizing catgut, but without finding anything that was satisfactory. I then tried formalin, but the method of preparation that Dr. Stone gives is not exactly as I prepare it. I always wash the catgut first in ether for a few hours and then put it in five per cent formalin for twenty-four hours, afterwards transferring it to a 1 to 200 formalin solution in which it is preserved until used. This gives a soft, clean, flexible, yet strong catgut. If kept too long in the five per cent solution it becomes brittle, but in the 1 to 200 solution it keeps well and has lasted me for three weeks. I have seen it remain in the tissue in a plastic operation on the cervix for three weeks before being absorbed.

Dr. Stone said: It is a mistake to keep catgut in a strong solution of formalin for a long time, a few hours only is necessary to sterilize gut. I have tried Senn's method of preparation, and wasted ten months in boiling the gut. Formalin seems to have very much the same effect upon gut that chromatizing it has. For this reason chromic acid has now been put aside as a means of

hardening catgut. Edebohl's method is first to boil the gut in alcohol, and afterwards put it through a sterilizing solution. I think the mistake Dr. von Ezdorf makes is in putting the formalin gut into 1 to 200 formalin solution instead of absolute alcohol.

MEETING OF FEBRUARY 24, 1897.

Dr. S. C. Busey, President, in the Chair.

Surgeon General Sternberg. U. S. A., addressed the Society on the subject of Pathogenic Micro-organisms. The lecture was illustrated by stereopticon views.

MEETING OF MARCH 3, 1897.

Dr. S. C. Busey, President, in the Chair.

Dr. Busey, Chairman of the Committee of Legislation, made a report upon matters new before Congress and read the following letters, which he desired to be filed:

1545 I Street, N. W.

WASHINGTON, February 27, 1897.

Mr. R. N. HARPER,

President Pharmaceutical Association.

Dear Sir:—

I am surprised at the statement, published in *The Washington Post*, of this date, to the effect that pharmacists, presumably members of your association, are, at the instigation of non-resident drug manufacturers, seeking to prevent the passage of the bill now pending in the Senate, entitled "An act to regulate the sale of Poisons in the District of Columbia", and basing their opposition upon alleged dishonorable motives of medical men. I was several times assured by you that the Committee of the Pharmaceutical Association approved that bill in the form in which it passed the House of Representatives, and I am reluctant to believe that the committee of pharmacists has forfeited its assurances. Waiting a prompt answer, I am

Yours etc.,

SAMUEL C. BUSEY, M. D.

President Medical Society D. C.

WASHINGTON, D. C., March 1, 1897.

Dr. SAMUEL C. BUSEY,

1545 I Street, N. W.

Dear Sir:—

Your letter has been received, and in reply can say positively that the committee of which I was chairman has done nothing at all to get "non-resident drug manufacturers" to prevent the passage of the bill you refer to. I will say, however, that I was informed that some outside manufacturers would fight it if their attention wss called to it. I positively declined to do anything in that direction.

Although there were two very objectionable points in the bill, to our committee, we have done nothing to prevent its passage. Yours respectfully,

ROBT. N. HARPER.

Dr. H. D. Fry reported the following:

I. SUPRA-VAGINAL HYSTERECTOMY FOR A LARGE SUBMUCUS FIBROID.

The patient was a young nullipara and had been exhausted and bedridden by hemorrhages. Result was satisfactory.

II. OVARIAN CYST WEIGHING FORTY-FIVE POUNDS.

III. SEPARATION OF RECTI MUSCLES.

Woman had given birth to two children and there was complete diastasis of the recti with separation about four inches. On assuming an upright position the intestines escaped from the adbominal cavity. An elliptical shaped piece of skin was removed, the sheath of the recti split and united with catgut

sutures. The union was prompt and the hernia entirely cured.

DISCUSSION.

Dr. I. S. Stone said: Some time ago I presented a uterus here that had been removed through the abdomen. Both Dr. Fry's specimen and mine reported sometime ago, presented a soft myomatous appearance which was breaking down, and the result in both cases showed the wisdom of entirely removing the uterus. To have attempted to enucleate these tumors would have been to leave a very dangerous opportunity for sepsis. If Dr. Fry had operated through the cervix in this case he would have had sepsis. It is impossible to do clean surgery in cases of this kind by enucleation of the tumor, but all cases of uncomplicated hysterectomy should get well without shock or rise of temperature.

Dr. Fry said: I have nothing to add, except a few words about the removal of submucous fibroids per vaginam. We cannot make a rule that all such growths must be removed by morcellement. Each case must be decided for itself. A fibroid growing within a nullipara uterus, or, in any case within a uterus with a small cervical canal, should be taken away with the uterus by operating through the abdomen. To attempt its extraction from below would give a high mortality from sepsis.

On the other hand, when Nature has made an effort to extrude the growth, and the cervix is dilated, or readily dilatable, the proper course would be to remove it from below. I have removed several in this manner, and one of them died of sepsis, although it was a most favorable one for this method of removal. The tumor presented like a child's head, and the cervix was fully dilated. I put on the obstetrical forceps and brought the tumor down to the pelvic outlet; it was then cut in pieces, and a broad pedicle followed to its attachment near the fundus. This was removed as thoroughly as possible, the uterus washed out and packed with iodoform gauze. The patient later developed sepsis, and died in spite of active local treatment.

FRACTURE OF THE LEG.

Dr. D. S. Lamb showed for Dr. W. H. Forwood, U. S. Army, a specimen of amputation of the right leg in the middle third because of a fracture of both bones. The injury was about five inches above the ankle joint, the broken ends overlapping each other about two inches. The patient was a soldier in a battery of artillery and on the last of December, 1895, his horse fell on him. As union failed to take place by the eleventh of the following April, the attending surgeon sawed off the broken ends of the tibia and introduced three screws and two nails through the ends. Union then took place. He was discharged July 25, on account of his disability and soon afterwards was admitted to the Old Soldiers' Home near this city. He had much difficulty in walking, had to use both crutch and cane; the leg muscles became atrophied and the leg itself was shortened; slight equino-varus also set in; there was also constant pain in the course of the anterior nerve and almost constant jerking of the limb, both interferring with sleep. His general health became much impaired by the pain and loss of sleep, so much so that amputation seemed to offer the only relief and this was accordingly done about January 23, 1897, by Dr. Forwood. The stump has healed up, the man is free from pain and growing fat. The point of special interest in the case is the fact that the anterior tibial nerve had been caught in the pressure of the broken bones and new growth of tissue, and as a consequence of the irritation of the nerve there were the pain and spasmodic action mentioned.

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CHAS. H. STOWELL, M. D. EDITOR.

THE EDITOR'S TABLE.

A Study of Cocaine.

This interesting drug is being discussed in a number of our exchanges. This is probably due to two facts: first, its use is being widened; and, second, its exact place in the materia medica is being questioned by its new rival, eucaine. In the Philadelphia polyclinic eucaine is used altogether in the eye department. The professor in charge says that its anæsthetic power is equal to that of cocaine and it has the great advantage of not being so toxic. The *New York Polyclinic* says, in an editorial, that as is often the case with other new remedies and therapeutic agents, eucaine does not fill the expectations it first created. The conservative "prophets of the past" may have the pleasure of saying, "I told you so," and just keep on with cocaine. After all, if cocaine be properly used the results are all that can be desired. In an article in the *New York Medical Times* of May, 1897, the conclusion is reached that because an injection of two drachms of a four per cent solution of cocaine produced a fatal result, cocaine is dangerous and should be abandoned! But the maximum dose for hypodermic injection as usually given is one grain, and in this case five grains were injected. It would be equally as reasonable to abandon the use of common salt because a "dose" of half a pound taken at once would probably kill. Besides, it has been definitely ascertained that eucaine produces local hyperemia, so bringing an excessive amount of blood in the operative field which must be a distinct detraction. Cocaine has just the opposite effect. The chief advantage claimed for eucaine is safety, but recent investigations go to show that it is really the more dangerous of the two drugs, for, while in cocaine poisoning there are premonitory symptoms, eucaine, on the contrary, overwhelms the patient almost at once. As for keeping a solution of cocaine free from fungus, it can be readily done by dissolving the cocaine in a saturated solution of boracic acid, which will remain sterile indefinitely.

The only real superiority of eucaine over cocaine occurs in ophthalmic work and lies in the fact that while it produces anæsthesia on being applied to the conjunctiva, it does not produce mydriasis and disturbance of accommodation as cocaine does. But, in the light of recent investigations by Reclus, and by Pouchet, eucaine cannot be said to be superior in any other way to cocaine while in many things it is decidedly inferior if the latter drug be intelligently used.

The *Codex Medicus* formulates this question into fifteen practical observations, as follows:

1. The use of cocaine should not be abandoned because its irrational employment has produced deleterious results.

2. Always make a thorough physical examination of the patient before injecting the drug.

3. It should not be used in cases showing organic diseases of the brain, heart, lungs or kidneys, or in persons of neurotic diathesis.

4. Children bear it fully as well as adults.

5. The patient should always be placed in a recumbent position prior to its employment.

6. Constriction should be used whenever possible to limit the action of the drug to the desired area.

7. Use a freshly prepared solution for each case.

8. Distilled water should always be employed, to which phenic, salicylic or boric acid should be added.

9. A two per cent solution has a better effect and is safer than solutions of greater strength.

10. Never inject a larger quantity than one and one-eighth grains when no constriction is used.

11. About the head, face and neck one-third of a grain should never be exceeded.

12. When constriction is possible, the dose may be as large as two grains.

13. Every slight physiologic effect is not necessarily to be taken as a cause for alarm.

14. Cocaine does have effect on inflamed tissues.

15. In case alarming symptoms occur, use amyl nitrite, strychnine, digitalis, ether or ammonia.

The *Laryngoscope* says that experiments carried out by M. Reclus give the following results:

1. That the injection of cocaine is not at all painful, while that of eucaine causes a certain smarting sensation.

2. Eucaine is a vaso-dilator, while cocaine is a vaso-constrictor. With the former the field of operation is clouded by the blood.

3. Eucaine is certainly an excellent analgesic, although in deep operations the perception of pain seems to be somewhat more distinct than with cocaine.

4. In an operation with cocaine, anæsthesia is still complete an hour and ten minutes after the operation, while with eucaine it disappears after forty-five minutes.

He preferred cocaine, as it presented warning symptoms of intoxication, while eucaine overcame the patient without any premonitory signs.

Use and Abuse of Ergot.

The *New York Medical Journal* publishes an abstract of a paper by Dr. More Madden of Dublin. The full paper was read before the Royal Academy of Medicine of Ireland.

The reaction against the former abuse of ergot in obstetrics, he says, has now apparently been carried to an extreme and undue extent, and has led to its disuse in many instances in which it might be employed most advantageously. He therefore submits some observations with regard to the circumstances under which long clinical experience has convinced him that ergot, or its preparations, may and should be given in midwifery practice, and the methods of its administration, together with a summary of the results to mother and child in 150 of the instances in which, in his practice, this drug has thus been resorted to.

Judging from the recent literature of this subject, says Dr. Madden, it may

not be superfluous to premise that to use ergot or any of its preparations safely and effectively during parturition the presentation should, as a rule, be cranial; that there should be no disproportion between the fœtus and the maternal parts or any obstacle to delivery in the genital tract; that the os uteri, if not previously fully dilated, should at least be sufficiently dilatable to allow of speedy delivery with the forceps whenever that may become necessary; and that a preparation of ergot should be selected and a dose given calculated to produce the required ecbolic effect.

Under such conditions ergot may be given with utility when required either before, during or after the second stage of labor—viz: First, in some instances (a) of delay from inertia of the uterus before the full dilatation of a dilatable os in which there is any evident danger to either mother or child from protraction of labor; secondly, it may be administered during the second stage (b) in nearly every case of long delay from inertia wherein the presentation is natural and the delivery not otherwise impeded, or in which (c) there is then either reason to apprehend the probability of subsequent hemorrhage or any such complication as may call for its use; thirdly, during the last stage of labor this ecbolic may be employed (d) to hasten the expulsion of the placenta when delayed by inertia, or (e) for the arrest of hæmorrhage; fourthly, after labor ergot may be resorted to either immediately (f), to prevent or check flooding, or subsequently (g) to produce such tonic or permanent contraction as will effectually seal up the uterine vessels and so lesson the liability to subsequent septic invasion, or (h) to effect the expulsion of clots and so arrest after-pains; fifthly and lastly (i), to stimulate such contraction as may quicken or secure the process of involution after parturition.

In such cases this ecbolic, if given at all, and whether ergot, ergotine, ergole, or any other of its preparations is selected, should be employed not in the repeated small and utterly insufficient quantities that have been recommended by some modern writers, but should be administered only once during labor, and then in such a bold, full and effective dose as may be likely to excite speedy and permanent or tonic uterine contractibility. With this view, in his own practice he therefore generally uses the fresh liquid extract of ergot of the British Pharmacopœia, of which he commonly gives two drachms, or in some cases three drachms, by the mouth, together with a drachm by deep hypodermic injection in the gluteal region at the same time.

In 70 of 150 obstetric cases in which he employed ergot the patients were primiparæ; in eighty they were multiparæ. In 148 instances the result was favorable to the mother. In ninety-five of the cases referred to the drug was given before the birth of the child—viz:, in fifteen for delay from inertia in the first stage of labor, the os being previously dilatable and the head presenting; and in eighty either for delay similarly occasioned in the second stage, or else for the prevention of hæmorrhage or for other complications. In ninety-two of these instances the children were born alive, either expelled by uterine action or extracted with the forceps. Of the ninety-five cases in which ergot was given before the birth of the child. in eighty-six the placenta was normally expelled, and in nine its removal had to be assisted for morbid adhesions or other causes, one only of which was a case of hour-glass contraction. In fifty-five cases the ergot was given after the birth of the child—viz., in twenty-five during

the third stage to hasten the expulsion of the placenta or to prevent hæmorrhage; and in thirty after delivery, for the arrest of postpartum flooding, or for some other reasons to stimulate and secure tonic contraction of the uterus.

His experience on this subject, some of the results of which he has summarized, points to the conclusion that the dangers which are now so commonly ascribed to the use of ergot in obstetrics are probably largely attributable to its misuse or administration in unsuitable cases or in insufficient doses, and therefore furnish no argument whatever against its judicious and proper employment.

Anti-Vivisectionists and the Degenerate.

Now that the antivivisectionists have thought it wise to attack the medical profession for causing the most terrible and most useless suffering to dumb animals, it is no more than self defense that their own condition be investigated. It would indeed be a most sorry ending to all this if the public came to understand that "the races characterized by their great tenderness toward animals are the most cruel towards men", yet there is evidence that such is the case. Touching this point we quote from a recent editorial in the *Journal:*

"A degenerate sexual pervert recently executed for lust murder, at Paxton, Ill., has had his mental soundness doubted because of his sentimental kindness toward animals. Sentimentality of this type is exceedingly common among criminals and other degenerates about whose legal responsibility no true alienist could entertain a doubt. They have both a knowledge of right and wrong with a power of self-control, which alone would be sufficient evidence of responsibility under the true legal test which depends on whether freedom of the will be impaired. Despite the assertions of the antivivisectionists, misanthropy is often associated with great love for the lower animals, and the races characterized by their great tenderness toward animals are the most cruel toward men. This was singularly well illustrated in the Sepoy rebellion, where fanatics indignant at the killing of cows, butchered men, women and children with horrible atrocity. The same thing is illustrated in the suspicional world-betterers who so marred the French Revolution. Couthen, one of the most merciless of "the committee of public safety," was very much devoted to spaniels. Chaumet exceeded female sentimentality in his tenderness to his birds. The murderous Fournier carried on his shoulders a pretty little squirrel attached by a silver chain. Panis was intensely devoted to his pheasants. Marat reared doves. Sergent, another agent of the Reign of Terror, was also devoted to spaniels. A lady came to implore his protection for a relative confined under sentence of death. He scarcely deigned to speak to her. As she retired in despair she trod by accident on the paw of his favorite spaniel. Sergent, enraged and furious, exclaimed, "Madam, have you no humanity?" It may seem, as Havelock Ellis remarks ("The Criminal"), a curious contradiction of what has been set down concerning the criminal's moral insensibility, his cruelty and his incapacity to experience remorse when it is added that he is frequently open to sentiment. It is however true. Whatever refinement or tenderness of feeling criminals attain, reveals itself at what we should call sentiment or sentimentality. Their cynicism allies itself with sentiment in their literary productions. Their unnatural loves are often sentimental as revealed in the character of the tattoo marks. Two interesting examples of criminal sentiment have recently been

recorded by Dr. Lindan. A German criminal (it is perhaps as well to note that he was a German) having murdered his sweetheart most cruelly, went back to her house to let out a canary which might suffer for want of food. Another, after having killed a woman, stayed behind to feed her child which was crying. Lacenaire, on the same day that he committed a murder, risked his own life to save that of a cat. Bulwer recognized this principle when he depicted Eugene Aram as very indulgent to animals. Wainewright was always very fond of cats. In his last days his sole companion was a cat, for which he evinced an extraordinary affection. One of the chief characters of Wainewright's essays is their sentimentality. Himself when in prison he described as the possessor of 'a soul whose nutriment is love and its offspring art, music, divine song and still holier philosophy.' All prisoners make a pet of birds or animals or flowers if they get the chance."

The Keeley Cures. Where are all the Keeley cures? Only yesterday they were located in every city and even in every thriving town: today you have to make diligent inquiry where one can be found. Indeed, if these cures all disappear then will we be obliged to cease drinking, for to whom can we flee when overcome with the jubilee? It certainly looks as if these establishments were following the course of the Amick consumption cure, and the places that once knew them will know them no more. Without doubt the Keeley cure was the means of reforming some, who wisely took advantage of this opportunity to break away from old associates and assure them that they no longer had a desire for strong drink. But who believes today that the remedies employed had a particle of power to destroy an appetite, often the direct result of hereditary influences? The *Quarterly Jonrnal of Inebriety* says that during the year 1896, twenty-two so-called Keeley gold cures suspended and dissolved; twenty-seven gold cure homes, where specific treatment for alcohol and opium was given, have gone out of business; five new companies have been formed to sell rights to use secret inebriate cures; three ex-superintendents of gold cure establishments have committed suicide.

To this we would add that in three years we have made notes of the relapse of nineteen physicians who have been medical directors of gold cure establishments. Ten of these persons sought treatment in regular asylums, where no specifics were used.

The editor of the *Ft. Wayne Medical Journal* calls attention to the harmful influence which the Keeley cure exerts upon the human system as effecting the longevity of life. He says that carefully compiled statistics by life insurance companies show that the life of a Keeley Cure graduate is very materially shortened, even though the individual was not originally considered an inebriate, and in consequence several of the most prominent life insurance companies absolutely refuse to consider the application for a policy from any Keeley cure graduate, no matter in how good condition the health might be.

Treatment of Fractures. The *International Journal of Surgery* is publishing a series of articles under this title and the *New York Polyclinic* publishes the following corollaries deduced from them:

1. Unless a fragment is threatening to break through the skin, the fracture should never be reduced except by a physician and then only when apparatus is at hand to keep the parts in permanent apposition.

2. Men carrying an injured person should not keep step.

5. Strychnia for shock, morphia for pain, but no alcohol.

4. Always give anæsthetics for reduction of a simple fracture. It is better and easier to reduce and set compound fractures without anæsthesia.

5. It is very rarely necessary to make a patient go through the double agony of "temporary" and "permanent" setting of the broken bones.

6. In simple fracture gentle rubbing of the ends will assist in getting rid of shreds of tissue which invariably are caught here.

7. Nowadays a surgeon will rarely be satisfied that a bone is properly set, until verified by the X-ray.

8. Plastic splints, preferably plaster of Paris, are surely the best apparatus when they can be applied.

9. Ambulant treatment is coming more into vogue. No simple fractures require constant confinement to bed, except of the innominata and upper third of the femur.

10. It is not necessary and sometimes very harmful to "wait for swelling to disappear" before putting on a permanent dressing.

11. A well applied splint with good apposition of fragments should not be removed too early. It is not necessary to apply the massage early in ordinary cases.

12. Proper time for massage is two or three weeks after fracture of upper extremities, and four or five weeks for lower extremities—if the bones are slow to unite firmly.

The Germ Content of Mother's Milk. Koestlin of Halle, has recently published an instructive article resulting from original researches made upon the germ content of mother's milk and the etiology of mastitis. After going into the literature of the subject rather thoroughly and making a large number of experiments bearing upon the subject, he concludes his article with the following propositions which are given in a late number of *Medicine:*

1. The milk in the breasts of pregnant women, nursing women and newborn children, as the investigations of other observers and my own observations show, in the great majority of cases contains bacteria. I find in pregnant women micro-organisms in eighty-six per cent of the cases; in nursing women in ninety-one per cent of the cases; and in new born children in seventy-five per cent of the cases.

2. With very few exceptions we have to deal with staphlococci alone, and especially with the staphlococcus albus.

3. No suggestions for influencing the germ content of the milk could be obtained.

4. The entrance of the bacteria takes place from without from the nipple; entrance by way of the blood current is up to this time not proved without injection.

5. Those germs which find their way into the gland are relatively harmless; they do not injure either the mother or the child.

6. There is no mastitis without micro-organisms.

7. Infection in mastitis results from without by way of the lymphatic vessels through skin injuries, and extends in various ways, dependent upon the kinds of germs which have gained entrance. There occurs either the common form of mastitis, called forth by the invasion of staphylococci in which the staphylococcus aureus comes chiefly into consideration, or the much rarer form of pseudo-erysipelas, of retromammary abscess brought about by the streptococci. The bacteriological, as well as the anatomico-pathological and clinical, findings speak

for this view. Of course, mixed infections are possible.

8. A metastatic mastitis originating in a hematogenetic way is hitherto unobserved.

Distance of Human Vision.

The *New York Polyclinic* says that the longest distance ever encompassed by the human vision, so far as the records go, is 183 miles, between the Uncompahgre Peak in Colorado, and Mount Ellen in Utah. This feat was accomplished by the surveyors of the United States coast and geodetic survey, who are now engaged, in conjunction with representatives of other nations, in making a new measurement of the earth. The observers on the Pacific coast have been able to signal from Mount Shasta to Mount Helena, a distance of 190 miles, but have never been able to get a response. Between the other two peaks communication has been continuous for an hour or more on several occasions. The Uncompahgre is 14,300 feet in height, while Mount Ellen is 13,400 feet. The longest distance that the human eye ever reached until this record, was made between Algiers and Spain, 168 miles.

Too Many Journals.

Of course there are too many medical journals. And there are too many doctors also. But who is going to give either up? Not so long as there is any cake to slice will we be running away from the picnic. And even after the cake has all been eaten still will there be sport in waiting and hoping.

Bacteriophobia.

This is a good name for it, and, as the study of germs proceeds, it becomes more and more appropriate. The *Indian Planters' Gazette* says that in these days of microbes and contagion from all things, a new set of sanitary regulations for general guidance ought to be jumbled up into the form of an Act and shoveled before the Viceroy's Council in order that it may become law. A few suggestions like the following might help the Deputy Legal Remembrancer:

Every hotel, hostel, bar or restaurant keeper must set apart a special knife, fork, spoon, plate, glass and table for each customer, and the customer's name must be inscribed.

No two persons must be supplied with milk from the same cow.

No two men may kiss the same girl.

Small boys must not wear jackets that their elder brothers have grown out of.

It is a criminal offense to cut down parental pants to fit the offspring.

No person under penalty of 5,000 rupees shall put his arm around the waist of another person, even for the purpose of dancing, without having first caused the anti-microbe spray to be used for several hours in the vicinity of such person.

No person shall sit on another person's lap on pain of death.

Shakespeare on Appendicitis.

An esteemed correspondent, who says that, as the good Hebrew believes everything can be found in the Talmud, so a good Anglo-Saxon thinks that everything is in Shakespeare, calls our attention to a reference to the appendix in the "Taming of the Shrew." He thinks it is particularly appropriate, although he would cast no reflexion on any particular hospital. The quotation reads: "My master hath appointed me to go to Saint Luke's, to bid the priest be ready to come against you come with your appendix." Later this same appendix is ranked among the "forward and unable worms." But here Shakespeare's prescience fails him for once, for he makes Lucentio return from Saint Luke's with his "appendix" attached to him more securely than before. Per-

haps this remarkable escape may be due to the fact that, although "Curtis" had been about, he had made his exit before the "appendix" was brought in.—*Record.*

The Origin of Uric Acid.

The editor of the *Medical Press* says that ever since physicians, aided by physiological chemists, learned to recognize the existence of uric acid as a factor associated with, and presumably causing, certain diseases, such as gout, the great question of its source of production has been before the profession. Quite recently it has become more or less the fashion to regard uric acid as a product manufactured exclusively outside the body and as introduced ready made in certain articles of diet, notably meat.

It is odd, to say the least of it, that this view should have obtained such general acceptation, seeing that not even those who are responsible for its inception are able to state that they have ever discovered uric acid in the blood or tissues of healthy animals, and the evidence all goes to prove that uric acid is never a normal constituent of the blood or tissues of the healthy animal.

These observers base their views on the fact that bodies of the xanthin class are discoverable in the tissues, and these, they profess, on somewhat inadequate grounds, to regard as the equivalents of uric acid. This question crops up once more anent the treatment of gout by a diet exclusively composed of red meat, associated with the daily ingestion of large quantities of hot water.

It may be conceded that great benefit attends this treatment, at any rate in certain cases of gouty arthritis, but this does not help to solve the problem of its action, though it must be singularly disconcerting to those who regard the disease as one directly due to the excessive ingestion of the acid in meat. There is reason to believe that gout owes its causation to more complex factors than its students are apt to believe.

It is impossible to gainsay the evidence in favor of the tendency of a too starchy diet to favor the formation of uric acid, an influence which has been ascribed to the affinity of amylaceous food for oxygen, thereby interfering with the due oxidation of the nitrogenous ingesta. It may well be that it is the interaction of the various articles of diet that promotes the formation of the peccant material, though how these chemical changes come to pass is a question which still awaits elucidation at the hands of the physiologist.

Judging by the results obtained by practitioners of both schols, there must be some truth underlying both hypotheses, and it remains to eliminate the perplexities and to arrive at a proper understanding of the chemico-physiologic process which govern the production and absorption of the acid.

The second number of the new journal devoted to the X rays is at hand and it contains much interesting reading, while the illustrations are well worth a year's subscription. An illustration of an elbow is especially clear, and yet the exposure was only one and a half minutes. It seems that long exposures are not necessary, hence the dangers from the rays are greatly reduced, if not entirely removed.

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TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M.D.

MEETING OF MARCH 10, 1897.

Dr. S. C. Busey, President, in the Chair.

BILATERAL ANCHYLOSIS OF THE JAWS.

Dr. D. S. Lamb presented a specimen with the following history of the case:

The autopsy showed bilateral bony ankylosis of temporo-maxillary joint and some minor anomalies. Condyloids were fused with zygomatic processes and glenoid fossæ on the left side, including also, the articular eminence; in each case the fusion formed a smooth round mass of bone with no outlying osteophytes; and measured transversely, right and left respectfully, three-fourths and one inch, and antero-posteriorly five-eighths and one inch. Alveolar processes showed general atrophy; especially marked in right upper molar portion where the posterior tooth was entirely exposed posteriorly and in the left molar portions where the teeth had been extracted and the alveoli were largely absorbed. The third molars do not seem to have erupted. Anterior teeth directed more than usually forwards; lower molars failed to properly antagonize the upper. Chin prominent and square. Teeth extensively carious and coated with tartar. Wall of cranial cavity quite thick by increase of diploe; half inch thick at occipital apex. Small bilateral epipteric bones. Orbital plates high arched. Bridge of bone crossed left lateral groove. Vomer deviated to right side. Bony palate depressed downwards. Petrous bones showed no lesion.

The subject was a very light colored woman. She was delicate as a child with a predisposition to scrofula, and had suffered from tubercular inflammation of right breast and axillary glands. When nineteen years old she had some ear trouble for which some turpentine was dropped in her ear; after which she had immobility of the jaws. Her hearing, however, as well as her speech were unaffected. She ate such food as she could swallow without mastication.

Necropsy showed slight serous discharge in left axilla. Left lower limb œdematous. No sign of inflammation around temporo-maxillary joints. The ears and petrous bones showed no lesion. There were tubercular ulcers on vocal cords; lungs and bronchial glands tubercular; many tubercular ulcers of ileum, cæcum and vermiform appendix; mesenteric glands enlarged and cheesy; and a few small tubercles in right kidney. Ovaries atrophied and tubes distended with fluid.

I would call attention to the bilateral

lesion. Unilateral ankylosis is not uncommon; the bilateral is much less common; and when both bilateral and bony is comparatively rare. The woman could speak distinctly and without difficulty; in many if not most of the cases speech is more or less affected.

It seems impossible to say with certainty what was the cause of the lesion in this case. Most cases of ankylosis of the jaw are fibrous; the bony form being much less frequent.

As to the treatment of this lesion, it seems necessarily to be by removal of bone. The operations of Bottini (1878), Esmark (1855), Humphrey (1854), Rizzoli, Koenig (1878) and Mears differ from each other in details, but consist mainly in removing either the condyle, or the condyle and neck, and in some cases also the coronoid process; or the removal of a wedge shaped portion of the ramus. There is difference of opinion as to the best incisions through the skin and soft parts, to avoid injuring important nerves and blood vessels. My impression, after looking over many cases, is that the operation of removing the condyle and part of the neck has been followed by the best results.

Ruault and Fouquet (*Bull. soc. anat.*, Paris, 1885, vol. LX, p. 432) found in Egypt a mummy of the time of Ptolemy, in which the left temporo-maxillary joint was completely obliterated, and there were osseous stalactites around the joint. They submitted the specimen to Cornil who believed it to be of rheumatic origin.

Greig of the Dundee University College reports (*Edinburgh Med. Jour.*, 1894–5, vol. XL, p. 307-9,) a dissecting room subject, in which bony ankylosis was found, with wasting of the muscles of mastication except the buccinator, and believed it to have been caused by suppurative parotitis.

Payan, in the *Rev. med. franc. et etrangere*, 1841, vol. IV, p. 194-7, reports having treated a man seventy-five years old for asiatic cholera; he had also immobility of the jaws, since the age of five years, due to a violent blow on the head. He died of cholera and Payan made a necroscopy. There was complete union of the condyles and temporal bones, perfectly even and smooth, and without demarcating line between the two bones. Most of the teeth were present; the anterior teeth directed more forwards, the posterior more outwards than usual; salivary concretions around them. Several molars and incisors had been removed to enable him to take food.

THE IMPORTANCE OF THE LYMPHATIC SYSTEM FROM A SURGICAL STANDPOINT.

By Edward A. Balloch, M. D.

It is the writer's belief that in the whole domain of medical science there is no more neglected field of inquiry than the lymphatic system and no other in which richer rewards await the investigator.

A glance at any of the standard text-books on anatomy will show how it has been neglected. The blood vessels, even down to the ultimate arterioles and venules are described with unnecessary minuteness and prolixity. By way of contrast the lymphatics are dismissed with a few pages of more or less vague

description, the illustrations being either copies of Mascagni's plates or drawn from the imagination of the artist.

It is scarcely necessary to give lengthy descriptions of the minute anatomy of the lymphatics. Suffice it to say that, in all essential particulars, the larger canals are identical in structure with the blood vessels, except that the coats of the former are thinner. The lymphatics of the tissues and viscera resemble the capillaries in that they consist of a single layer of endothelium. The analogy in structure with the blood vessels is at once apparent. In their ultimate ramifications the lymphatics terminate in the connective tissue everywhere, forming the so-called connective tissue spaces. This emphasizes a fact of surpassing interest and importance to the surgeon, namely, that from a surgical standpoint, the connective tissue is merely a continuous series of lymphatic sacs. When the conception is grasped in its entirety that the subcutaneous tissue, the intermuscular planes, the intercellular tissue of the viscera, etc., are simply lymphatic sacs held together by a reticulum of fibrous tissue and everywhere connected by lymphatic ducts, the possibilities of the spread of infection seem endless.

The next anatomic fact of interest is that the subdural, subarachnoid, synovial, pleural pericardial and peritoneal spaces are simply lymph-sacs, in free communication with the surrounding tissues by means of stomata and lymph-ducts. Every surgeon exercises the greatest care when called upon to invade any of these cavaties but were he equally impressed with the fact that the connective tissue everywhere is simply a series of just such sacs it might conduce to greater watchfulness in all operations involving the tissue. When we consider again that the cavities of the tendon sheaths are but lymphatic sacs many cases of rapid and serious infection from apparently trifling wounds involving these strictures become better understood and the necessity for the separate closures of these sacs in all operations involving them, so strenuously insisted upon by Treves and others, seems reasonable.

The anatomy of the lymph-glands demands a passing notice. Three elements make up a lymph-node; the reticulum, endotheloid cell-plates and the lymph corpuscles. Stress is laid here upon the reticulum, the importance of which will be apparent later. Physiologically, the lymph may be considered as the principal agent in the formation of the blood.

The course of the lymph through a gland is this: From the afferent vessels into the various sinuses of the gland and thence into the efferent vessels. Owing to the presence of the reticulum, before alluded to, the current of lymph will flow slowly, as if through a spongy filter. Thus the reticulum serves to arrest extraneous elements which are disposed of by the amœboid corpuscles. The lymph glands, then, are barriers against infection, as is demonstrated by their early enlargement and increased activity following inoculation of the tissues with pathogenic micro-organisms. Viewing the vast extent of this system and its weighty physiological functions is it too much to say that it is the most important single element of the animal economy?

To consider the pathology of the lymphatic system *in extenso* would be to cover about the entire domain of surgical pathology as there is scarcely a surgical disease in which the lymphatics do not play the chief role. It is not, therefore, my purpose to discuss every surgical disease in detail, but to run rapidly over the field, concentrating argument on

two points, viz: the part played by the lymphatics in tuberculosis and in cancer. Considering first the simple loss of lymph it may be stated as an axiom that a lymphorrhagia is fully as exhausting as a hemorrhage. This is well shown in a case recently reported by Schwinn (*Annals of Surgery*, vol. XXIII, No. 5) in which a large branch of the thoracic duct was wounded during an operation for the removal of tubercular glands in the neck.

Inflammation of the ducts themselves, or lymphangitis, is noteworthy, because of the distinction to be made between the superficial and deep forms. Any one who has seen the dense, brawny thickening of the tissues characteristic of the deep-seated form of the disease, and the extensive suppuration, often unsuspected, will agree with the statement that it is an affection demanding prompt and vigorous treatment.

The subject of occlusion of the lymph-ducts is too vast to allow of any but scanty mention. The occlusion may be complete or partial. To occlusion are due lymphangioma, lymphvarix, lymph-scrotum, lymphœdema, including macrodactylia and macropodia, and finally, the various forms of elephantiasis arabum. Coming now to the affections of the lymph-nodes it may be stated as a general proposition that enlargement of the lymph-nodes means infection somewhere. The possibility of enlargement as a result of trauma is not denied, but is rare, and it is essestial that the trauma be applied directly to the gland.

The point of infection need not be near the affected gland, but the virus may traverse a long line of ducts before becoming arrested, the ducts themselves escaping injury. A familiar instance is the enlargement of the glands in the groin, the focus of infection being in the foot.

Lymphadenitis may be acute or chronic. In the acute form the source of infection should always be sought for and removed, if possible. If allowed to progress the consequences of this form of adenitis are an irritative periadenitis with thickening of connective tissue and the formation of pus. When pus has formed it should be given early and abundant exit by a free incision. Leaving out of account the small proportion of cases due to venereal disease and other causes, the principal causative factor in chronic adenitis is tuberculosis. The domain of scrofula has been steadily encroached upon in past years until now nothing is left to it except to be absorbed in the ever enlarging territory of tuberculosis.

Tuberculosis of the lymph-glands is a common affection among children. When the bronchial and mediastinal glands are affected the existence of the disease is often unsuspected. Thus Babes found the cervical, bronchial and mediastinal glands affected in more than one-half of all the autopsies performed at the Childrens' hospital at Buda Pesth during eight years.

It may be profitable to trace the course of this disease in the cervical glands. A child with a predisposition to tubercular disease, contracts a simple nasal catarrh which is allowed to become chronic. As a result of this catarrh the cervical glands become inflamed and enlarged. Upon the subsidence of the rhinitis, the glands remain in this chronically inflamed state. Here then is the opening sought by the bacilli. The soil is ready, the germs are ever present, and it is not long before a conjunction is effected. Eczema and other diseases of the skin of the face and scalp are also causative factors in this affection.

It is but lately that attention has been drawn to carious teeth as a cause of this

disease. Starck (*Munchener Medicinische Wochenschrift*) was able to demonstrate the existence of carious teeth in forty per cent of his cases of tuberculous cervical adenitis. There was a correspondence in location between the diseased teeth and the enlarged glands. In two cases he was able to demonstrate direct connection between the two diseases. At this time the writer has under treatment a young man: while under the dentists care for carious teeth and disease of the alveolus at the point of the chin, a gland beneath the chin suddenly enlarged and softened, to be followed by enlargement of the glands on both sides of the neck in rapid succession. With these facts in view it may seem superfluous to emphasize the necessity of careful attention to all diseases of the mouth, nose, throat and face in children.

Whatever the mode of invasion, so soon as the glands are once the seat of the bacilli, the series of changes common to tubercle begins to take place.

Recall for a moment the structure of a lymph-node. In describing its anatomy stress was laid upon the reticulum and its importance as a strainer for noxious products. This function is very much in evidence in this disease. The glands enlarge, inflame and break down, simply because they are endeavoring to act as barriers against the entrance into the general circulation of the bacilli of tuberculosis and their products. If the child be healthy they may succeed in their task. If not, the breaking down of one gland may be the signal for the invasion of the next in series, and one outpost after another may yield, until the main work is captured, and we have to do with a general tuberculosis, the result of the primary invasion of a single gland.

Many surgeons go so far as to advocate the removal of the cervical glands in every case where they are enlarged. My own views, based upon a moderately extended experience, are about as follows: In an otherwise healthy child, where the disease is limited to one or two glands, with no evident tendency to spread, there should be made a fair trial of therapeutic measures. On the other hand, in a poorly nourished child, of the type formerly classed as scrofulous, with many nodes enlarged, some perhaps suppurating, and with a manifest inability to resist the spread of infection the glands cannot be too soon or too thoroughly removed.

The operation for the enucleation of diseased cervical glands may be one of the easiest in surgery or one of the most formidable, demanding of the surgeon a minute knowledge of anatomy, great skill in dissection and a capacity to meet alarming and trying accidents. It is not a task to be lightly entered upon, hence the opinion that, in suitable cases, other means should be given a fair trial before resort to the knife, is advocated.

Aside from tuberculosis of the lymphatic system itself, the lymphatics play an important part in surgical tuberculosis of all kinds. Remote as tubercular osteomyelitis may seem from the lymphatic system, it is nevertheless the fact that enlargement of the bronchial glands precedes, in most cases, the disease in the bone.

Antecedent disease of the lymphatics as a factor in the causation of tuberculosis of the genito-urinary organs, has not yet been fully investigated, but an experiment by Simmonds points this way. An emulsion of tubercular sputum was introduced into the peritoneal cavity of a rabbit and a few days later the left testicle was bruised. The organ swelled somewhat at first, but the swelling subsided in a short time. Two months later the rabbit was killed and, in addition

to a general miliary tuberculosis, there was found a broken down nodule in the left testicle.

Tuberculosis of the tendon sheaths demands a passing notice. Recalling the fact that these envelopes are lymph-sacs it must be apparent that we have here but another example of the lymphatic nature of this protean disease. From our knowledge of tuberculosis in general, and tuberculosis of the lymphatic system in particular, the proposition may be readily deduced.

The assertion may confidently be made that nothing short of complete removal by careful dissection will serve to eradicate this disease, and it is strenuously insisted upon that early removal is vastly preferable to late extirpation, both as to local and general results. Delay is useless and procrastination dangerous.

Now as to cancer. No subject today more occupies the time and the best thought of the surgical world than cancer and the operations therefor. If cancer in its beginning is a local disease it would surely seem as if we should be able to limit or prevent its recurrence and dissemination after operation. If we can answer the question, How does cancer spread? we ought to be able to oppose some barrier to its frightful progress. The answer is not far to seek. Cancer spreads through the lymphatics and spreads rapidly too, as witness the following instance noted by Warren (*Surg. Path.* p. 644): "In a case of cancer of the breast which the writer removed recently the patient was able to state the exact date of origin, the place where the growth was found having been examined a day or two before. The operation was performed when the growth was three weeks old and already a nodule the size of a small pea was found in a lymphatic gland of the axilla."

Resuming the thread of the argument that cancer spreads through the lymphatics and speads early, there follows logically the proposition that in all operations for cancer, however early, the neighboring glands should be extirpated.

In cancer of the breast this is the generally accepted procedure, but I wish to make the proposition a broad one and to have it take in cancer of any and all localities. Another proposition is that, in order for a thorough extirpation of all routes along which cancer may spread we need a more accurate study and knowledge of the exact anatomy of the lymphatic system. Taking mammary cancer as an example, we have a hazy knowledge that there are lymphatic ducts leading in various directions from the mamma and that there are glands in the axilla which should be removed. As to the exact number and direction of the ducts and the number and location of the glands our knowledge is vague. Recurrences often teach us the location of ducts and glands, before unsuspected, but to learn anatomy at the expense of the lives of our patients is to pay dearly for knowledge thus acquired.

We have known for years that secondary growths often occur in the abdominal viscera after removal of a cancerous breast. We are now aware that this is due to a chain of ducts in the anterior mediastinum which runs through the diaphragm and connects with the lymphatics of the liver. It is true that there is no spread through these ducts until the routes to the axilla have been blocked and the after history of modern operations shows that, if the knife be resorted to early, there is not much danger from this source.

If we can remove a cancerous growth and with it, all the affected lymphatics, there will be no recurrence. Anything that will help us in this endeavor will be a distinct gain. A precise knowledge of

the lymphatics likely to be affected in any given case will be a long step in advance. Teachers of anatomy should see to it that their students are better taught in this respect. There is certainly a place in medical literature for a work which shall give us some definite information in this matter.

DISCUSSION.

Dr. J. Ford Thompson said: Lymph spaces are found all over the body, and I think surgeons have, for a long time, been fully aware of the fact that the danger in surgery was of infection through these spaces and channels, and that aseptic surgery was more for the purpose of lessening this danger than for anything else.

In speaking of the surgery of the lymphatic system, and especially of the treatment of tubercular glands, we have a very large field for discussion, and the practice of surgeons differs widely. The best results are nearly always obtained by an operation. I open the glands and curette down to healthy tissue, and then treat the wound openly. When the glands are large and hard I generally prefer to dissect them out and do a clean operation. In regard to cancer I believe that early operation is necessary in every case. I agree with Dr. Balloch that however early the operation may be undertaken these lymph nodules will be found diseased. I cannot agree with him that because we may make these extensive dissections we will cure our patients. The experience of all surgeons will go to show that no matter how extensive the dissection may be we can give no guarantee against a return of the disease. Recurrence is the rule rather than the exception.

In cancer of the lip the operation should be carried down under the jaw, exposing the whole sub-maxillary region, and this should be done as a primary operation. The vast majority of cases recur if this is not done, and it may recur any way.

Dr. Forwood said: I would like to call attention, briefly, to what seems to me to be a lack of clearness in Dr. Balloch's perception of the differences between inflammation, suppuration and tuberculosis. Inflammation has been defined as the "response of living tissues to an injury". It is essentially a physiological and not a pathological process. It is by inflammation that wounds and injuries are repaired and healed, and without this rents in the flesh would show no more disposition to heal than rents in the clothing that covers our bodies.

Suppuration on the other hand is a specific infectious disease caused by the introduction of certain pyogenic organisms into the seat of injury from without. The blood escaped from the vessels, the serous exudate, the injured and detached cells and tissue elements furnish a suitable culture medium for these bacteria, usually the staphylococcus or streptococcus, at the point where the reparative effort is going on, and thus it is that inflammation and suppuration are naturally associated. But inflammation never produces pus.

Tuberculosis is another specific infectious disease caused by the tubercle bacillus. The animal organism responds to the irritation of this bacillus by producing for its growth a special and peculiar substance which is known as tubercle, in which it develops and propagates its species. Thus it will be seen that inflammation, suppuration and tuberculosis while all three may be associated in the system, nevertheless each one is an entirely distinct and independent process.

Dr. J. Ford Thompson said: I cannot agree with Dr. Forwood to the reparative processes of inflammation. The process of repair is an entirely different thing from the process of inflammation, which is an unhealthy process, and the whole object of modern surgery is to prevent inflammation. When inflammation takes place there is much discharge of serum and lymph around the parts, and the curing of inflammation is much more difficult than preventing it at the start. In the process of repair there is absolutely no necessity for having pus. In modern surgery suppuration, properly speaking, does not take place. Wherever there is inflammation there is also infection. Some of

the modern text books do use the term "inflammation" in the sense of "repair", but I must assert that it is not. If I have a case of inflammation in a wound I always feel that there must be something wrong with my dressings, or that I dtd not see the case early enough.

Dr. Forwood said: It is apparent from Dr. Thompson's remarks that he confounds inflammation with suppuration. This is not an uncommon error. A radical change of ideas requires time. But there can be no doubt about the facts, and sooner or later these will enforce general recognition. I deny that there is any known process, other than inflammation, by which wounds are healed or injuries repaired. What the gentleman calls the "process of repair" is precisely that phenomenon which has been known and described as inflammation from the time of Hippocrates to the present day. Inflammation and suppuration have nothing in common. When suppuration occurs it is always the result of infection from a specific pyogenic organism from without, and when these organisms are excluded, as they often can be, wounds and injuries heal by simple inflammation.

Dr. Balloch, in closing the discussion, said: Dr. Thompson says that in most cases of cancer we have recurrence. Why do we have recurrences? It is because we have not removed all the affected lymphatic glands and ducts. The fact that we do have recurrences shows that we do not know as much about the lymphatics as we should.

As to Dr. Forwood's remarks, they have been answered by Dr. Thompson. Inflammation is simply a matter of leucocytosis, and is simply an irritative process. If in inflammation the leucocytes get the upper hand of the organisms, resolution will take place, while, if the organisms get the upper hand of the leucocytes we have suppuration. It can be said that pus is the remains of the leucocytes which have died in the fight. To my mind, while inflammation may not produce suppuration, suppuration is the result of inflammation. I agree with Dr. Thompson that wounds do heal without inflammation.

MEETING OF MARCH 17, 1897.

Dr. S. C. Busey, President, in the Chair.

Melon Seed or Rice Bodies from Synovial Sheaths of Wrist.

Dr. D. S. Lamb presented for Dr. R. F. Holden a specimen of what are called melon seed or rice bodies obtained from the carpal synovial sheaths and palmar bursa of the left hand. The patient was a white man, aged about fifty years, who had had paroxysms of rheumatism for twelve or thirteen years. For the last three or four years he had had a painless swelling over the front of the left wrist. About one year ago he had a similar swelling over the second metacarpo-phalangeal joint which was incised and promptly healed. Early in January, 1897, a swelling appeared in the palm of the hand which on being opened discharged synovial fluid and about 200 of the melon seed bodies. The cavity was curetted, cleansed with carbolised douche and packed with iodoform gauze, and healed. Pus now formed in the swelling over the metacarpo-phalangeal joint and is discharging; no melon seed bodies came from this opening.

This is the second specimen of the kind I have seen. The first is in the Museum, and was contributed by Dr. Johnson Eliot, in 1873; being removed from a gangloin of the left hand of seven years standing. I have shown this specimen to medical men and but few have seen anything of the sort, except those bodies removed from joints, especially the knee joint. Of course the synovial sheath of a tendon and the synovial lining of bursæ are very similar to the synovial membrane of joints and we might expect to find similar bodies in them. Most cases in which these bodies are found are like that from which the specimen was obtained in that they have

a history of chronic rheumatic arthritis. The synovial membrane appears to be thickened in patches, becomes pendulous and finally detached. A somewhat similar process results at times in loose cartilages in joints. The latter may be partly ossified. The melon seed bodies are fibrous in structure, are smooth, white and flat; they may however be composed of fibrin only.

Similar bodies are found not only in chronic tendo-synovitis, but also in tuberculous synovitis of tendons, perhaps oftenest in this disease if we accept some late authorities as Treves. They are also found in the enlargement of the palmar bursa usually known as compound ganglion. In the case which I report I incline to the belief, as stated, that the cause is a chronic inflammation of rheumatic origin.

DISCUSSION.

Dr. J. J. Kinyoun said: In 1883 he had a case of a lady, aged sixty-five, who had rather a solid tumor in the palm of the hand, which had been growing for about two and a half years. He passed several hypodermic needles into the tumor and drew off a quantity of serum, but not enough to materially reduce the size of the tumor. He then advised a radical operation, and a long incision was made in the palm of the hand, when about two tablespoonfuls of these rice bodies came out of the cavity. The cavity seemed to be lined with synovial membrane. It is said that these tumors are tubercular, but I think this case was chronic inflammation of the synovial membrane.

Dr. T. C. Smith presented a patient with tumors of the wrist of an unknown character, several small tumors being on the back of the wrist. An operation had been performed and small fibrous masses had been removed. He asked that the contents of the tumors be referred to the committee on microscopy to determine there nature.

The following report on this specimen was made at a subsequent meeting by Dr. Blackburn: The tumor growth from the back of the hand and arm is very perplexing. Some microscopic fields are richly cellular and much resemble sarcoma but there is much connective tissue among the cells, and whole fields are composed of loose and wavy bands of fibrous tissue. The blood-vessels seem to be surrounded by many lymphoid cells and there are groups of leucocytes scattered over the field.

There are peculiar cavities in the sections which seem to be lined with some kind of epithelial-like cellular structure. If these are not cyst cavities I do not know what to call them.

Dr. Lamb requested the following to be accepted as the report of the Committee on Microscopy on the structure of the tumors presented by Dr. Smith. The tumor appears to be of rather peculiar structure. I need add nothing to the description of the structure already given by Dr. Blackburn except to say that I take the "epithelial-like structure" to which he refers, as a variety of high endothelium lining rather wide lymphatic spaces. In these spaces I also find cross-sections of intensely staining, somewhat refractive, fibrinous masses—the so-called "rice bodies". The presence of certain papillary outgrowths covered by this same high endothelium points, in my opinion, to the origin of this growth, viz: from some diverticulum of the synovial membrane. The vascularity of the structure sustains this inference. Hence, I think that we may say we have here a specimen of lymphangioma, to which one might add the qualifying word, sarcomatodes, since certain areas immediately surrounding these lymph spaces are very rich in cells, as Dr. Blackburn has already pointed out. The malignancy of such a tumor would probable be slight.

THE ARMY MEDICAL LIBRARY AND MUSEUM.

Their Practical Usefulness and Future Possibilities.

By D. L. Huntington, M. D., U. S. A.

In the course of my experience as the officer in charge of the Library and Museum division of the Surgeon General's office, better known as the "Army Medical Museum and Library," it has happened on several occasions that I have been asked by apparently intelligent and educated persons, "What is the *practical* use and value of these collections which have been accumulated, evidently with much labor and care, and at great expense?"

Modifications of the same inquiry have come to me at times from many sources —both professional and laical—involving the questions of the scope of usefulness of this Institution to the medical profession, and as the character, amount and value of the work done in the several departments of this division, and as to its possibilities for the diffusion of valuable and useful scientific knowledge to the professional and lay world.

I have, too, been somewhat surprised to find here in Washington, and even among members of the medical prefession within easy reach of the Capital, a very indefinite knowledge, in fact I may say ignorance, of the great wealth of medical literature and of the grand collections illustrating the several departments of anatomy, surgery, medicine, physiology and pathology which have placed the library and museum in the foremost rank of institutions of its character in the world.

For this reason I feel that a brief sketch of the rise and growth of these collections, with a concise account of the work done by the library, museum and laboratories connected with the department, may be interesting and helpful in demonstrating the scope of practical uselulness exerted by them, as well as their far-reaching favorable influence on the advance of medical science.

Previous to the late civil war the library of the Surgeon General's office was composed of a few hundred books on medicine, surgery and collateral subjects—very much such a collection as might naturally come together in the office of the chief of an important bureau. Few additions were made to this collection until the year 1865, when Dr. John S. Billings, than an assistant Surgeon of the Army, was detailnd to take charge of it.

Br. Billings at once recognized the value of the opportunity then presented for laying the foundation of a great national medical library. As a result of his energy, knowledge and judgment we have to-day the magnificent library of the Surgeon General office.

In the earlier years of its existence this collection was placed in the old Ford's Theatre building, which, after the tragic assassination of President Lincoln, was purchased by the Government and turned over to the medical department of the army for the use of the library and medical museum.

Aided by liberal appropriations from Congress, and directed by the energy and perseverance of Dr. Billings, the growth of the library was phenomenal. In a few years its constantly increasing size and value, as well as the continual menace of destruction or damage by fire in the old and exposed building, made it imperative to provide secure and ampler accommodations elsewhere.

In 1886 Congress passed a bill appropriating the requisite funds for the erection of a spacious fire-proof building. This building, located near the National Museum and Smithsonian Institution, was completed and occupied in 1887. From that date to the present time the growth of the library has been continuous, until it has now come to be acknowledged as "the most complete collection of medical literature in the world," containing on its shelves to-day over 120,000 volumes of bound books and more than 200,000 pamphlets, together with a most valuable collection of atlases of plates and engravings, illustrating anatomy, surgery, physiology and obstetrics.

In its general scope the library is intended to cover the entire field of medical and surgical literature, making it possible for the student to avail himself of the writings and teachings of all countries and all times, with the least possible loss of time and labor. While intended mainly as a reference library, a certain latitude is observed by the management with a view to making it as useful as possible to the medical profession, and especially to students and writers, by loaning to well-established medical societies, and libraries of prominent medical colleges, such books as may be called for, upon the condition that these bodies will guarantee the care and return of books loaned, and be responsible for all losses and damages which may occur. Rare and valuable books and manuscripts, plates, unbound books and those whose loss cannot be easily replaced, are not loaned.

Connected with the library is a reading room, where all the current journals and periodicals are kept on file for the convenience of those desiring to consult them. To those making special studies in any line of the profession we are prepared to afford all possible facilities.

The annual list of journals and periodicals subscribed for and received at the library amounts to over 1,100, and embraces all subjects pertaining to the literature of medicine at home and abroad. The machinery for the increase of the library is complete. Through agents in all the principal cities of the world, we are constantly receiving not only the current and latest medical literature, but frequently have the opportunity to secure rare and valuable works of past centuries. The appreciation in which this library is held is best evidenced by the frequent and large donations of books and pamphlets from every source, among which are many duplicates of works in our possession, which afford us the means of obtaining desirable additions through exchange.

The library receives its main support from the liberality of Congress. Since the year 1867 up to the present time, the appropriations of this body for the support of the library have averaged about $7,000 annually, which enables us, with a fair degree of certainty, to keep our journal files complete and make very considerable additions of new books, as well as insuring a small annual amount for the purchase of old and rare books and curiosities of medical literature. The practical value and utility of this collection is proven daily by the members of the profession, who make regular use of the facilities offered and by the interest shown by medical men from the United States and abroad. The reading room is constanrly occupied by readers, students and investigators. This vast wealth of medical literature is made accessible to the profession through the medium of the Index Catalogue, the first series of which comprises sixteen large octavo volumes of about 1,000 pages each. This work was begun in 1879,

and has progressed continuously at the rate of one volume per year. The catalogue is arranged by authors and subjects in one alphabet, and may fairly be considered "as practically an index to all the medical literature of the world up to nearly the end of this century."

The large accessions of material since the publication of any one of the volumes are carefully carded, and will appear in a second series of volumes, the second of which is now in the course of preparation, to be followed by as many more as may be required, though dependent upon the continued liberality of Congress. A comparatively small edition of these volumes is printed, and is distributed mainly to medical libraries, medical colleges, and to certain of the larger public libraries of the United States and Europe.

The annual accessions to the library are about 2,500 books and 5,000 pamphlets. In periodical literature the library is particularly rich,—comprising all the medical journals, transactions of societies, reports of state and city boards of health, clinical reports and ephemeral productions which can be reached, from all parts of the world. It may be stated that the department of journalistic medical literature has become to be considered almost a special function of this library, and it is believed that no other library in the world can boast of so complete, extensive and valuable a collection of this kind.

The literature of the library embraces twenty-six languages, not including some minor dialects.

The Army Medical Museum, occupying the eastern wing of the building already alluded to, is also of comparatively recent origin, and owes its existence to ex-Surgeon General W. A. Hammond, who, in 1862, issued a circular stating that it was "proposed to establish in Washington an Army Medical Museum," and directing medical officers of the Army "diligently to collect and forward to the office of the Surgeon General all specimens of morbid anatomy, surgical and medical, which may be regarded as valuable; together with projectiles and foreign bodies removed, and such other matters as may prove of interest in the study of military medicine and surgery." The response to this circular was immediate and gratifying. From the large general hospitals and from the battle-fields, as well as from private sources, came extensive contributions to this enterprise, so that a catalogue, printed in 1866, showed a collection of 7,716 specimens of all kinds. To the administrative ability and personal interest of Surgeon General J. K. Barnes we are indebted for the successful establishment of this museum on a permanent basis. Succeeding Surgeons General have manifested similar interest in perpetuating and fostering its growth.

To Drs. John H. Brinton, J. J. Woodward, George A. Otis, John S. Billings and others are due its scientific value and importance, each of these gentlemen having devoted time, care and learning to building it up to its present condition.

On the completion of the new library and museum building, this collection was transferred from the old Ford's Theatre building, with the library, to its present spacious and secure quarters.

At the present time the museum contains over 33,702 specimens of all kinds, which may be divided as follows: Pathological, 12,164; human anatomy (normal), 4,470; comparative anatomy, 1,717; microscopical specimens, 12,457; medals, 1,205; instruments and apparatus, 1,044; microscopes (showing evolution of the instrument), 188; miscellaneous, 457. The annual addition of specimens in all the above lines is large and constantly increasing.

It would be useless and tedious to enter upon a detailed description of this exhibit; it must suffice to say that as a storehouse of the results of military medicine and surgery of thirty years ago it is probably the most unique and valuable collection in the world, affording a curious and interesting comparative study of methods and treatment of that period with the advanced views and practice of to-day.

But tnis museum is not solely a receptacle for the results of the work of the past; it has kept well abreast of the times, and presents in its later accumulation the evidences of the advance of scientific medicine and surgery. Departing from its original limitation to military medicine and surgery, our museum has greatly extended its scope, and now includes the departments of human anatomy, physiology, embryology, pathology and anthropology, with illustrations of the methods of research connected with all the branches of practical medicine.

As will be seen by referring to the classification of specimens, we have made the largest use of photography and micro-photography in illustrating tissues and structures of the human body. Within our miscellaneous section are included models for the study of veterinary medicine and surgery, and some space is devoted to prosthetic apparatus, and to instruments and appliances used in the several departments of medicine and surgery; in fact, we desire in this museum to effect through object teaching that which is secured in the library by written works and treatises, viz: a thorough illustration of the science of medicine and surgery as it is found at the present day.

Connected with the museum are well equipped and commodious chemical, pathological and bacteriological laboratories designed for the work pertaining to the medical department of the army, such as the examination and assay of medicines and medical agents purchased for the use of the army; the detection of food adulterations, the determination of the purity of warer supplies for military posts and the chemical analyses connected with military hygiene generally; the examination and diagnosis of morbid processes sent from posts and localities not having facilities for such work; and the elaborate inquiry into the causation of diseases supposed to be dependent upon microscopic germ life.

The work of these laboratories has proved most satisfactory, and of inestimable value to the army and to general medicine, as well as serving as important feeders to the museum.

In the rich field and congenial atmosphere afforded by these incomparable collections has been founded by the present Surgeon General, Dr. George M. Sternberg, an Army Medical School, designed to carefully train and equip the newly appointed medical officers of the army for their future duties as physicians, surgeons and sanitarians. The course of instruction in this school, though limited in time, provides for practical work in operative surgery; a comprehensive course in the study and technique of pathology and bacteriology and laboratory practice in medical and hygienic chemistry. To these are added lectures on Military Medicine and Surgery, Hygiene, the duties and responsibilities of military medical officers, a short course on military law, and miscellaneous lectures and exercises on subjects pertaining to the needs of the army medical practitioner. The results attained by this course of instruction have already fully equalled the expectations, and abundantly confirmed the wisdom of the plan. It has been found that this

school not only excites the interest of the student officers, but has inspired the members of the Medical Corps with a zeal and stimulus for serious study and patient investigation of the many problems of advancing medicine. Its influence is still more widely reaching, inasmuch as it is the means of establishing centres of information and instruction in the distant communities where our medical officers are dispersed; and in promoting and encouraging the adoption of a uniform system of national military surgery, a matter of the greatest importance should we unfortunately become involved in war, necessitating the calling into service of the citizen soldiery.

In the foregoing brief sketch of the library, museum and their outgrowths, I think I may have sufficiently answered the question as to *practical usefulness* as well as that pertaining to the *character*, extent and value of the work daily carried on within our precincts.

Of the possibilities of this library and museum for the diffusion of valuable scientific knowledge, some idea may be gained from what has already been said; but more than this, such collections are in themselves educators, however trite this expression may be. Here are stored the records or the past—a history of what has been done and of what is now being done—for it is the function of a library or museum to preserve these records for all time. The wisdom and experience of the past must be used for the proper development and perfection of the work of the future, and the student of medicine who uses wisely and intelligently this accumulated wealth cannot otherwise than enlarge his field of knowledge, his powers of observation as well as his individual views and opinions.

It has been a fundamental idea in the building up of this library and museum that they should be, not only repositories of books, of specimens illustrating normal and abnormal anatomy and physiology, of the curious and interesting in medicine and surgery, but also a school for mental discipline and the demonstration of methods of research; a centre, wherein are gathered from all parts of the world the newest thoughts, opinions and discoveries of men who are devoting their lives to the regeneration of medicine, endeavoring to place it in the line of the exact sciences and to purge it of the superstition, empiricism and fallibility which have, in past times, degraded it to a rank little higher then charlatanism.

How far this great medical library, well prepared to meet all demands made upon it and supplemented by one of the best museum collections of the world, can be made the agent for furthering the cause of higher medical education and a more exact method of thought and practice, is the problem now on trial in your midst. With the results attained in the comparatively few years of its existence, we are well satisfied and look with confident hope to still greater achievemeets in the future.

It can hardly be doubted that the medical world has been made richer by the contributions to science which have gone forth from this Institution in the past twenty years, under the direction of the several heads of the medical department of the army. I need only mention the work of Woodward in the field of medical photography and microphotography; the elaborate Medical and Surgical History of the War of the Rebellion; the many lesser circulars on matters of medical, surgical and hygienic interest, issued through a series of years, and finally the monumental Index Catalogue of the Library, which is yearly making accessible to the world untold treasures of medical literature.

In your daily professional reading of the journals, text-books and monograms, put forth in such profusion by the medical press of to-day, you have but to note the extensive bibliographical references to this library to convince yourselves of the possibilities and power therein stored.

In your daily routine, whether of practice or of literary work,—in the preparation of lectures, magazine articles and treatises, or in the study of obscure and difficult cases, do you not turn instinctively to our files and shelves for references, information and opinions, or to the cases of our museum for illustrations of any given malady, abnormality or injury?

If then, such a field for intellectual research lies open at your doors, why may not its usefulness be extended until it becomes, as it should be, the centre of medical thought and information for the whole country? That this is the tendency is shown by the annually increasing demand for books, not obtainable elsewhere; by the constant presence of students and visitors from other cities, seeking for that which is necessary in the prosecution of their work; by the largely augmenting correspondence on matters pertaining to professional interests, requests for bibliography, extracts and translations; by the numerous applications for exchanges, for surplus material and help in building up feebler institutions throughout the land; by the good will manifested by the profession everywhere in the donation of books for the library and of material for the museum, and, finally by the interest and curiosity shown by the general public who carry away with them new ideas and possibly information, which may aid more or less directly general enlightenment and the diffusion of useful knowledge.

That the influences of this Institution and of the work of its several departments have been most salutary to the personnel of the army medical corps is unquestionable. That, as a medium of communication between the great outside world of thought, activity and progress and the lesser and more isolated world of the army surgeon, this institution has proved to be a great boon, the evidences of which are daily becoming more manifest. To these influences may be ascribed the increased stimulus to earnest thought and serious work throughout the corps; the desire for self-improvement and the ambition to stand in the foremost ranks as physicians, surgeons and sanitarians. As each class of student officers leaves us for active service we feel the comfortable assurance that each member goes well equipped to answer the diversified demands made upon the army surgeon, whether in peace or war, and that with a thorough preliminary training, a fixed habit of thought and research, industry and perseverance, we can safely leave him to work out his career.

At no period in the history of the library and museum have we been better prepared than now to carry on the work demanded by modern medicine, surrounded as we are by active minds and willing hands and by the vast armamentarium contained within our walls.

In an institution such as ours, it is evident that upon its stability and upon the integrity of its members lie its possibilities, power and influence. As constituted, its several departments, mutually inter-dependent, readily accessible and thoroughly organized, form a harmonious whole.

As an exponent of the wisdom and intelligence of our government in fostering and encouraging the highest types of knowledge and educational advantages

for the promotion of the health, well-being and efficiency of its army, and for the general welfare of the human race, it stands unrivalled, and it is believed that national pride, professional necessity as well as the spirit of progress may be relied upon as incentives to insure the continuance of the good will and modest appropriations necessary for its support.

Under its present management, as a part of one of the important bureaus of the War Department, there seems nothing more to be desired.

Its administration is economical and energetic; it is in touch with the line of the army and military organizations of the country, with the great medical profession, and with the national medical and surgical associations of the United States, and with the many scientific departments which are here clustered under the protection of the government. It is doing good and efficient work to the advantage of general and special medicine and to the benefit of mankind.

Any failure to support, any dismemberment of the unity of this harmonious whole cannot fail to be calamitous to all the purposes and ends for which we have, for so many years, faithfully and industriously labored.

What more can be said for the possibilities afforded by this library and museum for the diffusion of valuable scientific knowledge? Only this; that well known and familiar as may be these collections to many of us, they must be *better* known, more *widely* known and more fully appreciated, not only to the medical men of this vicinity but to the profession everywhere; to the intelligent layman, who, while he may not view them in a strictly scientific spirit, may be made to appreciate the fact that they represent the growth and evolution of the grand system of medicine of to-day, who, seeing and understanding the accumulating results of years of patient, devoted labor, may gain an intelligent sympathy with the physician and surgeon in his unremitting and unselfish round of duty.

To the legislator, who is asked to provide the means for the continuance and prosecution of our work, that he may fully comprehend the nature, extent and value of this work; that he may understand the fruitful influence which such collections must inspire on all thinking minds and how great is their tendency to exalt and dignify the nation, whose representative he is, and also, that in his turn he may be able to give his distant constituents an intelligent idea of what this nation is doing to further the work for the amelioration of the miseries of mankind.

And, finally, to the general student of biology, anthropology, ethnology and sociology who will find rich material for his researches in both these collections.

But, it is really upon the medical profession of the United States, with whom we are co-workers for the common good of humanity, that we rely for good will and sympathy in assisting us to extend our sphere of usefulness and to render of avail the possibilities which are in us, by standing by us, ready to lend the helping hand for the perservation of the unity and integrity of the Army Medical Library and Museum; an institution, the product of the energy, industry and intelligence of the medical department of the army, materially aided by the interest and generosity of the physicians and surgeons of this country, and fostered by the liberality of our government; an institution, which within the period of a human generation, has grown from small beginnings io its present stature, the admiration of all who know it, and, we trust. the especial pride of the American medical profession.

DISCUSSION.

Drs. T. C. Smith and A. F. A. King spoke of the importance of keeping the Medical Library separate from the Library of Congress and a motion was offered and adopted that the Medical Society pledges itself to do everything in its power to prevent the removal of the Army Medical Library to the Library of Congress.

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THE EDITOR'S TABLE.

Schlatter and the Free Dispensary.

Three hundred thousand people visited the "divine healer" Schlatter, during his stay in Denver. He has "treated" five thousand persons in a single day. It is said that he has received as high as 40,000 pieces of mail in a day! Some of these "seekers" were doubtless sincere, and thoroughly believed in the superhuman power of the operator. But doubtless the great majority were of the free dispensary class. Here was an opportunity of getting something for nothing, and why not take advantage of it? Probably not one per cent of the whole three hundred thousand would be willing to pay a good physician a dollar for his services. This incident in our history is simply a fine illustration of one of the results of our whole system of treating persons for nothing. Our hospitals and free dispensaries are fast becoming great teaching centres; centres from which proceed the doctrine that you need not pay a physician for his services at his office, when by going to his charity stand you can get the same service free.

Dangers from Hypnotism.

We have had occasion to remark before on the injurious results from hypnotism. The death of a young man in Chautauqua County, New York, from hypnotism by amateur performers has set people to thinking on the subject. The coroner's verdict was just to the point. It brought out the almost unanimous opinion from leading specialists that hypnotism was a dangerous proceeding unless undertaken by those skilled in this line. One expert testified that hypnotic suggestion is "fraught with grave dangers, and those who practice this should be held criminally liable". Dr. Charles H. Hughes, the well known editor of the *Alienist and Neurologist* said: "The repeatedly hypnotized subject becomes a more or less changed man as compared with his normal state, and to this extent, is in an insane state of mind with this difference from the ordinarily insane person, that his change of mental character is chiefly subject to the directing influence of another person rather than to his own perverted and abnormal volition, as is the case with the ordinary insane person. But he may become as insane and diseased in brain as an ordinary lunatic."

The general conclusion was that the practice is harmful under all circumstances except in the hands of skillful physicians for the treatment of disease, and even then in a narrow range of dis-

eases and with doubtful results. In all other cases it is dangerous, and should be suppressed by law and with severe penalties." And so the coroner's jury returned, their verdict concluding: "We would recommend that the state legislature pass a law prohibiting the practice of hypnotism."

Dr. Luke of Antioch.

The *London Lancet* has this to say about Dr. Luke: The parable, we need hardly remind our readers, comes to us on the authority of what M. Renan calls "*le plus beau livre qu'il y ait*"—the most beautiful book in all literature—the work, we may add, of a physician whose familiarity with Hippocrates has been proved by Hobart and Plumptre, and whose practice seems to have lain, at least for one memorable period, in the mercantile marine of the Mediterranean. Till recently the only version of the parable accessible to English readers represented this capable practitioner as reporting the Good Samaritan to have bandaged the victim's wounds—incised, punctured or lacerated—and then to have poured into them oil and wine. That mistranslation continued to puzzle generations of the devout till the Revised Version put matters right by substituting "pouring on" for "pouring in," the Authorized rendering having been adopted from a misinterpretation of the Vulgate. The Good Samaritan's therapeutics are thus vindicated as conforming to the recognized practice of the time, whether Greek or Jewish. The bandage having been adjusted, it was saturated with a mixture of oil and wine, an emollient and a stimulant, presumably to keep the cloth from stiffening while rousing the reparative or healing process. It was the practice employed in circumcision, as we read in the rule: "If there is no mixed oil and wine ready, each may be added separately." Galen, writing about a hundred and thirty years subsequently to St. Luke, describes a paste, in which oil and wine are the principal ingredients, to be applied to wounds. The elder Pliny, whose "Historia Naturalis" was nearly contemporary with St. Luke's gospel, refers to the same practice. The Good Samaritan's therapeutics, as reported by St. Luke, were, indeed, secundum artem; and if they have caused any difficulty to the non-classical reader, that has been removed by the revisionist substitution of "pouring on" for the meaningless "pouring in."

The Way the Wind Blows.

Meet a young man who is pining to get married and he is all the time talking about it, often against it, but always talking. A young lady declares she is wedded to her art, and all the time she is longing for someone to ask her to leave it. The miser is always talking about money, and the thief is sure to preach honesty.

Have we not had about enough talk on this subject of castration? It is castra- for the feeble-minded now: why, it would deprive one half of the human race of the power of reproduction. Then it is castration of the criminal: who is entirely free from all sin? Again it is castration of the insane. but we sometimes think the best of us are a little off. A crank now and then gets this disease so badly that he ventures to introduce a bill before some woolly legislature according to this new idea. This fact alone should stamp the mover as insane and he might find himself one of the first under the law! The whole business is one of the most nonsensical we have ever seen in print.

Surgeons are not all Alike.

In a late number of the *Medical Times* is an editorial which insinuates altogether too much against the skill and

honesty of one of the noblest and best of men. Commenting on the fact that Dr. Joseph Price has performed over 4,000 laparotomies, and probably removed thousands of ovaries, the editor asks, "How many of these ovaries might have been saved and restored to health by even moderate skill in the slower application of therapeutic methods?" To this we most emphatically answear that not a single one of them could have been saved, "even by moderate skill", or any other kind, if Dr. Joseph Price said they must go. To be sure a few might have been "saved" until their possessor had died from the results of their presence, but only then. We will venture to say that this editor does not know said Dr. Price, has never seen him operate, knows mighty little about the terrible class of cases this man deals with, and, above all, has not the slightest idea of the great care exercised by this operator in deciding what must he do to cure the patient. It is easy to sit in an editorial chair and criticise the greatest surgeon in the world, and especially upon a subject the critic knows little about. Go and see Dr. Price, my little man, and you will have the greatest change of heart ever experienced by any man since the time of St. Paul.

The Dispensary Question.

A reporter for the *Evening Post* of New York, visited the Vanderbilt Clinic a few days since, and in giving an account of the four hundred patients he says:

"Nobody was seen to arrive in a carriage, nor was any finely dressed men or sumptuously attired and adorned woman discerned in the crowd. But, on the other hand, those whose dress and appearance denoted an extreme degree of poverty were certainly in a very large minority. It is difficult to resist the conclusion that not more than one in twenty-five—the pen is tempted to write one in fifty—of the applicants treated at the Vanderbilt Clinic on the afternoon of observation was a legitimate patient. Not more than one in fifty was at all shabbily dressed. A large majority were fairly well dressed. A third of them, it will be safe to say, were quite presentably dressed. A few—perhaps as many as a fifth — were dressed positively well. Much the greater number of patients were women. Brightly flowered and feathered hats abounded. A silk waist or a silk skirt was no uncommon sight. Many of the women carried pocketbooks in their hands, quite as women do when they go shopping. A good many of them also carried satchels, not a few of which were decent enough looking. Umbrellas —most of them apparently good, sound specimens, and some of them of silk— were seen repeatedly. Jewelry was by no means absent. Breastpins, earrings, chains, bracelets—seemingly of gold— were easily to be seen. One woman, particularly observed, was handsomely and stylishly dressed in black. At her throat was a breastpin that looked like a gold one; around her neck was a black chain ornamented with gold or the semblance of it; about her wrist was a heavy coiled bracelet, apparently of the same precious metal. Her hands were encased in black kid gloves, her hair was carefully and modishly arranged, her bonnet harmonized with her dress, and her whole appearance was that of a person in thoroughly comfortable circumstances. She was not rejected. She received advice and a prescription, and waited patiently until her turn came to have the latter filled, when, like the rest she laid down her ten cents and received her medicine.

"A considerable number of children was present, either as patients or merely accompanying parents. The most of these—or, to be conservative, at least

half of them—were, to all appearance, well and tastefully dressed. At any rate, lace and ribbons were frequent adornments of their caps and dresses, and there was not the slightest hint about them of dire poverty. The men, on the whole, seemed less well off than the women, yet some of them were presentably clothed. One very decently attired man asked the superintendent of the building to expedite his turn at the pharmacy, as he was compelled to get back to his work on a street car. The superintendent obliged him. A colored man wearing a neat bicycle suit with golf stockings, and riding an almost new-looking 1896 bicycle ($100 make) (which, at the suggestion of the superintendent, he brought in with him, and put in a room reserved for bicycles), was one of the patients treated. He hung around for a long time after getting his medicine, and when questioned by the superintendent as to why he lingered, replied that he was waiting for a lady who had accompanied him. Another thing noticed was that the change returned at the window of the pharmacy not seldom included bills as well as coin. In short, it is believed that few impartial spectators could have resisted a feeling of scepticism concerning the absolute inability of most of these people to employ physicians privately, especially as it is the almost invariable rule of practitioners to take into consideration the circumstances of their patients (as the rich ones know)."

Another.

We have called attention to those physicians who have had hundreds of cases just like the rare one some leading physician reports. Some of these men have had "six thousand cases of obstetrics"; "never lost a case of diphtheria"; "can cure every case of cancer", etc. A new one has arisen who writes that he has had "thousands of cases of typhoid fever and the mortality so small it is not worth reporting." He never has a coated tongue, nor delirum; in fact his patients are only a little sick. He has two prescriptions, each containing six ingredients. We have looked up this place from which the new wonder comes, and there are only five physicians in practice, still it is large enough to give "thousands of cases of typhoid fever". A good place to locate in. Upon receipt of one hundred dollars we will tell any young and struggling physician just where this wonderful place is!

"Which Loved Him Best?"

One of our exchanges reviews a novel by this name, but does not answer the question propounded by the author. We will, therefore, volunteer to do this. Without doubt, this question is asked of a physician: "Which loved him best?" And, without doubt, the answer is: "The patient who was never asked to pay his bill"!

His Heart Failed.

There are not many cases of death on record where the heart continued to beat long after the decease of the individual! Therefore, it may be safely said that if the heart could be made to continue beating, death would not occur. Hence it follows, as a rule, that it is safe to assert a person is dead if his heart ceases to beat. And the conclusion of this argument is that "heart failure" is a cause of death. At least this is the way one of our exchanges figures it out. If there is any doubt about the continuance of the heart beat, then a post-mortem should be made to determine the point. These are wonderful days in which to practice medicine!

Medical Journals for Twelve Cents a Year.

There are not a few physicians who receive plenty of medical literature at the rate of one cent a month. A request for

a "sample copy" costs a postal card, and not a journal exists that does not receive many requests from these prospective subscribers. Thus it follows that the legitimate field for journalism is gradually becoming smaller and smaller. These same "sample copy" writers also request samples from the various advertisers. Hence it follows that if one refuses to furnish sample copies he also turns away just those who are going to write his advertisers, all of which requests will be checked up to the credit of said journal. The advertiser says, "We are not getting many returns from our ad in your journal, and we hardly think we will renew". The publisher, however, knows very well that an unlimited amount of these "requests" can be obtained if he directs his journals to the proper class, or if he supplies the sample copy fiends. It has been some years since we have accommodated a single one of them.

Dr. Francis Smith Nash of 1225 Fifteenth Street, announces that he will give instruction for Army, Navy, Marine Hospital, State and Hospital Medical Examining Boards. Such an opportunity should be embraced by a large number who contemplate service in the Army or Navy.

A Canadian medical journal says that Dr. J. F. W. Ross presented to the Toronto Medical Society 2,000 gall stones which he had removed from a clergyman on that day. They varied in size from a grain of sand to a small bean. Dr. Ross also reported removing an open safety pin two and one-half inches in length from the stomach of a hysterical girl. It was found sticking in the anterior wall.

THE COLUMBIAN MEDICAL SCHOOL HOSPITAL. The trustees of the Columbian University have given the Medical Department a large building, formerly the preparatory school, for the purposes of a hospital. The building is being remodeled and provided with wards, private rooms and operating amphitheater. The hospital will be under the exclusive direction of the Medical Faculty, and will be ready for use by October 1. A large amount of money has already been subscribed to make the necessary changes and the improvements are in charge of a committee of the Faculty, consisting of Drs. J. Ford Thompson, W. W. Johnston, A. E. deSchweinitz and D. K. Shute. The hospital building is located within fifty feet of the medical school.—*The Journal.*

LETTER FROM PARKE, DAVIS & CO. The ringing report in favor of the serum treatment of laryngeal diphtheria submitted to the American Pædiatric Society, and the stress laid on the early employment of a potent and concentrated antitoxin, impel us to remind the readers of NATIONAL MEDICAL REVIEW that we have long been in position to supply every strength, from 250 to 2000 units. The profession seem to lean by preference to doses of 1000 to 1500 units, but we can supply promptly all requisitions for a highly cencentrated serum in doses of 2000 units.

Our serum is rigorously tested and possesses, when it leaves our hands, a slight excess of antitoxic power to make good the loss of strength ensuing with age.

We furthermore particularly call your attention to the fact that our containers are glass bulbs hermetically sealed—not ordinary vials and corks. Dr. Geo. Duffield, in the *Journal of the American Medical Association*, March 6th, said; "I have found Parke, Davis & Co.'s anti-diphtheritic serum most efficacious. Apart from the potency of this brand, I must commend the ingenious manner in which it is marketed, viz., in hermetically sealed glass bulbs, which exclude the air and keep the serum strictly aseptic."

ORIGINAL COMMUNICATION.

ARE PHYSICIANS POOR BUSINESS MEN?

CHAS. M. EMMONS, M. D.

One who studies the conditions that confront the medical profession in the District of Columbia to-day, would not hesitate to reply in the affirmative.

I do not mean to say that they are poor business men in all respects, but certainly the profession as a body, has grossly neglected to protect the commercial rating of their bills. When a doctor desires to have his bills collected he is charged from 30 to 50 per cent. for such service.

In no other city do you find such unsatisfactory laws regarding the collection of bills due physicians, as is now in force in the District of Columbia.

Most men enter the medical profession because they find in it a calling suitable to their taste, and as a means to make an honorable living for themselves and their families.

Do medical men attend to business in a business like way ?

Is it a practical business method to allow such regulations as are now existing, to continue in force; protecting as it does many who can pay, if they would? The provision which precludes the possibility of attachment upon the salaries of government employees is one which should receive its "post mortem" at the next session of Congress.

This inability of medical men to collect what is honestly due them works great hardship upon young physicians, as they usually receive in rotation the practice of the army of what is known in the commercial world as "poor pay."

The medical men would not be alone in this effort to raise the standard of honesty in the District of Columbia; for the business men would gladly join hands and help correct the existing evil.

The Medical Association of the District of Columbia should at its next meeting adopt such resolutions and appoint a committee to bring about better legislation upon this vital subject.

It should be provided, so that the salaries of all residents in the District of Columbia could be attached at least 10 per cent per month, in satisfaction of judgments obtained against them for medical services.

I feel sure that the enactment of such a law would serve to elevate the medical fraternity in the eyes of the public: for when the people generally come to see that "the docter" is doing business on improved methods, his bills will be paid promptly.

THERAPEUTIC NOTES.

A Remedy for Diarrhea. Tannigen is now coming to the front as a remedy of exceptional value in the treatment of diarrhea. It is both astringent and antiseptic. It not only checks the diarrhea but it also destroys the fermentation going on in the bowels.

How to Treat Anaemia. A neat reprint comes to us from Dr. Wm. Krauss of Memphis, Tenn. He uses Gude's Pepto-Mangan and with remarkable success. He reports five cases where the blood counts showed unmistakable evidences of great improvement, and with unusual promptness.

A Valuable Hypnotic in Pneumonia. The *Vermont Medical Monthly* says that probably nothing known to the profession can alleviate the distressing symptom of sleeplessless in pneumonia equal to Bromidia. Its use obviates the effects of losing sleep and the patient thereby escapes a dire calamity.

For Bladder and Urethral Troubles. Dr. Jas. T. Atchison, of Lochland, Ky., reports his experience with Sanmetto as a standard remedy for all bladder and urethral affections. He says it is as much a specific for them as quinine is for ague. He has found it invariably successful in these cases.

For Atonic Dyspepsia. Dr. J. R. Clausen writes to the *Times* and *Register* that he has fully tried Gray's Glycerine Tonic in a number of cases of atonic dyspepsia and other stomach ailments with results "little short of marvelous." He says that as a tissue-builder and strength-producer "it has few, if any, equals." It checks waste and stimulates the liver and bowels to healthy action.

Antitoxin in Tuberculosis. We are in receipt of a new list of statistics from Dr. Paul Paquin, giving the results from the use of his Serum in some 226 cases. Of this number 40 seem to have made permanent recoveries, 110 have improved, and thus the list continues. Dr. Paquin has been very modest in his claims. He certainly has some marked cases recorded and a number of physicians report successes also.

Worth Remembering. A physician writes to the Imperial Granum Company that he has had most gratifying results from the use of their food in a case of obstinate vomiting of pregnancy. Under its use the stomach immediately became tolerant, and nutrition was rapidly retained.

For Intestinal Indigestion. Metcalf's Liquor Pancreaticus is the ideal preparation which will bring results in all cases of intestinal indigestion. It is uniform in strength, mighty in results and effectiveness. Its use in intestinal catarrh, will demonstrate its great value in this obstinate disease.

Treatment for Cystitis. A writer in the *New York Medical Journal* reports 16 cases of purulent cystitis treated with Lycetol. It is also highly beneficial in gonorrhea and whenever there is a purulent discharge. Lycetol exerts a most favorable action on suppuration and retards the decomposition of the urine.

Acute Dyspepsia of Infants. In the general Polyclinic at Vienna the acute dyspepsia of infants is treated with small doses of calomel, and cow's milk with Somatose. The report says that many cases of chronic gastro-intestinal catarrah were greatly benefitted by the use of the Somatose. The little patients rapidly improved under its use.

Treatment of Eczema Capitas. Being called to see a severe case of this kind, Dr. A. O. Lawrence had the child removed to the Children's Hospital, where the head was thoroughly washed and the greater part of the crusts removed. Then Pineoline was thoroughly applied. In four weeks the head was entirely well and the child returned to its mother.

Those Weight Charts. There are some good things all about us, which, if we fully understand, none would be without. This is the case with the Just's Food Weight Charts. Some of these charts have records upon them, showing the power of this food to change the most unfortunate to the happiest conditions. The Just's Food Company offers to send these charts to any address free.

Treatment of Chronic Rheumatism. Dr. E. C. Peck, of New York, says that when someone suggested that he try Phytoline on a case of chronic rheumatism, it was after about every other remedy had been unsuccessfully used. But Phytoline "just touched the spot." In the course of six weeks his patient was entirely free from rheumatism and has been well ever since.

For Two Painful Diseases. Dr. J. D. Albright, of Akron, Ohio, says that fully fifty per cent of all women have either leucorrhea or pruritus. After much experimenting on the best method of curing these troubles he has settled upon Tyree's Antiseptic Powder as all that could be desired. He says that since using this powder he "has never failed to cure a case." It gives immediate relief and the cure is permanent. A number of local physicians have given testimony to the merits of this powder.

Quick Relief for Headache. Prof. W. F. Waugh, of Chicago, writes that he finds a quick relief from nervous headaches and headaches dependent upon an irritable condition of the stomach, in the new remedy for pain, Ammonol. He reports a number of cases to illustrate just this point. This remedy is not a depressant, according to Prof. Waugh, but, a stimulant, owing to the presence of ammonia with the pain-removing drug.

It Digests Everything. We have some very appetizing tablets from the Chas. Roome Parmele company consisting of a combination of Caroid and charcoal. If you have a food you are fond of, but which is not fond of you, just carry a few of these tablets along, and forget you have a stomach. Caroid is the latest addition to our list of digestives, and the reports are very flattering to the effect that it will promptly digest all food eaten by man.

BOOK REVIEWS.

THE MENOPOUSE. Including a particular reference to the artificial menopouse. By Andrew F. Currier, M. D. 300 pages. D. Appleton & Co. 1897. For sale by Wm. Ballantyne of this city. Price $2.00.

We are not familiar with any other book treating of this subject. That one was needed is clearly discerned when we read the very interesting pages of this volume. Dr. Currier holds that the menopouse is not a time fraught with either peril or difficulty. "The menopouse," says the author, "is not a dangerous time or experience for the majority of women, any more than puberty is." The majority of women pass through it with as little incident or discomfort as they experience at puberty. It is only the exceptional woman who has a hard time of it. It is also another error to believe that cancer of the womb and the breast are especially connected with this time in life. Taken altogether, therefore, this is a book well fitted to cheer up many a life, and to set at rest many questions often in dispute among the fraternity. It is a most readable book, and one much needed at just this time.

EYE-STRAIN IN HEALTH AND DISEASE. By Ambrose L. Ranney, A. M., M. D., author of The Applied Anatomy of the Nervous System, etc., etc. Illustrated with 38 wood-cuts. Pages 321. Price $2.00. The F. A. Davis Co., publishers, Philadelphia.

It must be accepted at this time that eye-strain is a not infreqent cause of functional nervous derangements. It follows then that if we can remedy this difficulty we will be able to cure many ills of the nervous system without the use of drugs. The author sets forth with great strength and in a most convincing manner. The second chapter is one that will make the book very popular with a large class. Minute directions are given how one not especially trained may examine the eyes and reach definite conclusions regarding the presence of eye-strain without aid from the specialist. We had no idea before that so much could be done in the way of curing epilepsy by correcting eye-strain, and without the use of drugs; but a table of twenty-six cases is given here, showing that even permanent cures are possible. This is an interesting book, and will set those to thinking who read it.

The Medical Society of the District of Columbia is responsible only for the "Transactions" published in this journal. It is entirely free from any connection with the Editorial and Business management.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M.D.

MEETING OF MARCH 27, 1897. Dr. S. C. Busey, President, in the Chair.

PROFESSOR ROENTGEN'S X RAYS. WHAT ARE THEY?

BY ROBERT REYBURN, M. D.

Probably no discovery of modern times has attracted more widespread attention than that of the rays discovered by Prof. Roentgen or, as he himself calls them, the X or unknown rays.

The writer posesses a large Toeppler-Holz, electric, induction machine which has six, twenty-six inch circular glass plates; he has experimented with it and is decidedly convinced that these cathode or X rays are reflected from the cathode or negative electrode, just as any other form of light would be. If, for instance we suspend the Crookes' tube from the electrodes of the Toeppler-Holz machine and slowly revolve the glass plates, we find that the platinum negative electrode inside the Crookes' tube becomes faintly luminous; as we revolve the plates more rapidly the negative electrode becomes more luminous, and a small space on the upper portion of the Crooke's tubes also becomes luminous; as we increase the rapidity of the revolution of the glass plates of the electrical machine, this luminosity of the tube increases until the whole Crookes' tube becomes filled with a greenish light. Now, what does this show? It will be remembered that the first luminosity appears on the surface of the platium negative electrode itself, afterwards the luminous appearance shows itself as above stated on the upper side of the tube, just at the point where the X rays are reflected and focused upon the inside of the tube. This seems to prove to me that the X rays are reflected and focused just like any other rays of light. If, then, the X rays are rays of light, to what part of the spectrum do they belong? The surprising fact must be remembered in regard to the solar spectrum, namely, that the violet end of the spectrum, which possesses very faint powers of illumination, has what is called the actinic power of producing chemical changes and decomposing chemical substances, in a degree far surpassing that of any other part of the spectrum. Not only is this so, but the part of the spectrum beyond the violet end of the spectrum, extending

from the lavender band of Sir John Herschel to parts of the spectrum entirely invisible to our eyes, have powers of activity in producing chemical changes and in producing images on photographic plates, far greater than those produced by the rays of the other parts of the spectrum.

The range of the spectrum has, in fact, as is well known been immensely increased by means of photography, and. at the present day, astronomers take photographs of stars and nebulæ which are entirely invisible to the human eye. It should be remembered that Professor Tyndall, in his classic work on light, has shown that light itself, without the intervention of vapor of some kind, or dust particles, is entirely invisible to the human eye. He passed the most powerful beams of sunlight through large glass tubes, from which aqueous vapor and dust had been entirely excluded, and found that there was absolutely no illumination of the inside of the tube.

The writer believes with Dr. Bosc, Prof. Marcogni, and Mr. John Cabutt that the rays discovered by Prof. Roentgen, and commonly called the X rays, are nothing more than the rays beyond the violet and lavender end of the spectrum and which are ordinarily invisible to our eyes. When these rays produced by means of electricity are concentrated and focused upon the inner surface of the Crooke's tubes, they become visible, and produce the shadowgraphs, skiagraphs or pictures, which are now so familiar to us all.

We are still farther confirmed in this opinion by the fact, that phothgraphic pictures, as stated by Dr. Starr of Buffalo and Mr. J. R. Carr of Washington, D. C., have been produced without the intervention of Crooke's tubes simply by the electric light photographs, which we know have been produced by ordinary light through opaque bodies by prolonged exposure.

Some time ago a friend of the writer accidently turned the slide of a photograph plate holder, which had printed on it the word "exposed" towards the unexposed plate. The plate holder was not disturbed for two months and on developing the plate which had not been exposed to any light, the word "exposed" was legibly produced upon the plate. This, of course, showed that these letters had been printed in the dark many facts of similar nature have been recorded by photographers.

DISCUSSION.

Dr. F. B. Bishop: Helmholtz made the statement, long before the discovery of the X ray, that light could be made to penetrate opaque substances, not being deflected or refracted, if it were given vibrations enough per second. There is one peculiarity about the X ray. It is an invisible ray, and it does not matter whether it be exposed in a light room or a dark room, it will pursue a straight line and pass through anything in its way. A peculiar circumstance occurred to me, recently, while I was engaged in photographing the knee joint. My son brought in a photographic plate in a plate holder, and leaned it against the wall about ten or twelve feet from the patient, and behind a manikin. I used this plate in the second exposure, but I found that the plate was completely spoiled, and photographed on the plate was the word "exposed", the word having been photographed from the slide of the plate holder. This seems the more remarkable, when it is remembered that the plate was ten or twelve feet from the patient, and was behind a manikin which was about an inch or an inch and a half thick.

The photographing of metallic plates, as Dr. Reyburn has shown it to us, while not entirely new, is novel, to say the least. I can see why the doctor would get an impression of these heads; it is because the heads are in relief, one part of the metal is further from the

plate than the other, and therefore less affected than the other.

My method of using the tubes is to take my current from the inside of the small Leyden jars. I have experimented a great deal with different methods to secure a steady light. One method which works well is to attach a ball an inch in diameter on hard rubber handles of sliding rods, with connecting cords attached to the balls, and by sliding the rods and separating them, we get a spark between the balls on the hard rubber handles. The use of the small Leyden jar gives a beautiful light. No Ruhmkorff coil in existence gives a better light.

As the price of the Fluoroscope is enormous I made mine myself. By fusing calcium chloride, tungstate of soda, and chloride of sodium, and washing, we get the tungstate of calcium, which is fastened on the screens of the fluoroscope. This makes a cheap and very good screen.

Dr. Reyburn, in closing the discussion, said: The usual way of getting the rays is to take a galvanic battery, attach a Ruhmkorff coil, and then connect the Crookes' tube, and so get the light. The induction electrical machine has the same qualities, and I prefer it as it gives a more steady and uniform light. Besides, with the induction machine, you can start with the high power of the battery, while with the galvanic battery you have to start with low voltage and raise it up by a Ruhmkorff coil. With the induction machine you do not have this work to do. Waite & Bartlett have made a condenser which is a great improvement, as it makes the light more steady and uniform. The photographing of these metallic plates, while it does not bear directly upon medicine, is a very interesting fact and shows that there is nothing impervious to these rays; these very rapid vibrations of light, 800 trillions per second, seem to pass through everything.

Tungstate of calcium on the fluoroscope, while it enables us to distinguish certain portions of the body, is not sufficient to enable us to see clearly the softer organs, and I believe we can get something better; something that will show the difference between different organs as well as between the bones and soft tissues.

DISCUSSION ON PAPER BY DR. JOHN R. METZEROTT ON "A SHORT CONTIBUTION TO THE STUDY OF PHTHISIS."

Dr. Rupert Norton: Tuberculosis is prevalent everywhere, and whether it requires a specific change in the quality of the blood it is difficult for us to say. Northrup recently read a paper on tuberculosis in children, in which he took the ground that all cases were brought about by milk and food, and that there were few true inherited cases. The humoral theory of the origin of the disease explains some cases, for while it is true that the blood of the mother is not directly transmitted to the child, it is more than likely that the composition of the blood of the child resembles that of the mother in the closest particular.

Dr. Robert Reyburn: I am a firm believer in the humoral origin of the disease, for not only must we have the specific germ, but we must also have the suitable soil for the growth of the germ. After the age of 45 or 50 years, it has been shown by post mortem examinations, that seven-tenths of all who die have had tuberculosis at some periods of their lives. How are these people cured? The answer is, by improving the nutrition. If possible, we should get our patients away, but, to nine-tenths of our patients we cannot give that advice. The true way to build up the patient is to improve the hygiene and nutrition.

Dr. S. S. Adams: I cannot agree with all of the opinions expressed by the essayist in regard to tuberculosis, as manifested in children. Pre-tubercular anaemia is a condition which we all see, even before the bacillus is found, and we are led, in such cases, to suspect a general tubercular infection. In regard to imperfect hearts being a cause of tuberculosis in children, my experience differs also. If I should express any opinion in regard to the cause of enlarged heart in children, I should say that it was more often due to pulmonary engorgement, for where we have an obstruction to the

pulmonary circulation which enlarges the heart, we have a vis-a-tergo. These variations of temperature, recorded by Dr. Metzerott, are very interesting. I have a child now in the Children's Hospital who has a daily range of temperature of twelve degrees—from 95° to 107°. The child's lungs are studded with tubercles, and the respiration varies from 50 to 80 to the minute, showing a marked change from the usual ratio between temperature and respiration. The child does not appear to suffer from the high temperature, and all attempts to lower it only seem to do harm. These cases of phthisis, with remissions of temperature, often very much resemble remittent fever, but if the physician would look for other symptoms than the remission of temperature, he probably would not mistake them for remittent fever.

I agree with Dr. Metzerott as to the uselessness of cod liver oil in the late stages of the disease. When the child takes, at best, but little nourishment, it is worse than useless to upset the stomach by giving cod liver oil. The food is the principal thing in the treatment at this stage of the disease, and it should be given in the most concentrated and most easily digested form. In the Children's Hospital in clear, dry weather, in summer or winter, we send the children out of doors.

I regard congenital tuberculosis as very rare. I have failed in several instances, in which such a diagnosis has been made, to find at the necropsy a trace of tuberculosis. If congenital tuberculosis existed, it would certainly be found in foundling hospitals.

Dr. Vale said: Tuberculin has been condemned as a therapeutic agent, but it has a valuable place in the early diagnosis of phthisis and as a criterion of cure. Although tuberculin has disappointed us, the antitoxin seems to promise much. Paquin is producing an antitubercular serum in this country as is also Maragliano in Italy. Last summer a patient came under my care, in whom a recent hæmoptysis had called attention to pulmonary tuberculosis. He gladly accepted my advice to try the serum treatment. For a week or ten days before we could secure the serum his temperature ranged from 101° to 102°. Dr. Wells saw him with me and expressed the opinion that the man was in bed to stay there. With the use of the serum the temperature rapidly declined and he gained 10 pounds in a few weeks. Later he was sent south, and I am sorry I can not report his complete cure. I have now under treatment a young man whose serious condition was also first shown by a hæmoptysis. So far, the result has been a gain of 5 pounds in weight, and I regard him as on the road to rapid recovery. I think a great mistake is made in not telling a patient with incipient tuberculosis, the true nature of his disease. There is one case I would like to mention—of a young girl far advanced in tuberculosis and if she recovers under the serum treatment it will be a remarkable cure. The disease started two years ago as a pleurisy. Perhaps the tubercular nature of this case could have been demonstrated by the inoculation of a guinea-pig with some of the serous exudate to be found in the pleural cavity. Instead, however, even a tubercular laryngitis did not excite suspicion, until finally the patient last January, alarmed by her rapidly failing health and throat symptoms, sought other medical advice. She was rapidly going down hill when the serum was begun. Since then there has been a gradual improvement. The night sweats have ceased, temperature is but little above normal, 5 pounds in weight have been gained and physicial signs have improved.

Dr. E. A. deSchweinitz; Does not Dr. Trudeau, to whom Dr. Vale has referred, state that Maragliano's and Paquin's serum, instead of curing tuberculosis, actually cause the disease to progress more rapidly? I am, myself, a firm believer in antitoxin, and have done considerable work in this direction, but I think it has not yet been fully demonstrated that experimental tuberculosis in animals can be uniformly cured by this method. The treatment of tuberculosis, by antitoxin serum, is still in the experimental stage. It is not in the same condition as diphtheria antitoxin treatment. We should wait, before using the serum promiscuously, until its effi-

cacy in treating animals is established.

Dr. D. S. Lamb. I have sometimes noticed a small heart and small aorta, evidently a congenital condition, apparently a predisposing cause of phthisis. I have not seen enough of phthisis in children to speak with certainty of the condition of the heart. In adults I have found sometimes valvular disease in conjunction with phthisis; there is evidently nothing to prevent the association.

Dr. Metzerott spoke of the absence of tubercular disease in the aboriginal Chileans. The whole question of prehistoric tuberculosis is debatable; but I have seen bones, especially of the spine, which are pronounced prehistoric, and which look exactly like tubercular caries of the spine, with which we are so familiar.

Dr. D. S. Lamb presented the following specimens from tubercular patients: (1) Jejunum, showing thrombosis of veins and arteries; (2) Brain and intestine from same subject; brain showing thrombosis and hemorrhages, and intestine showing ulceration; (3) Two cases of tuberculosis of the larynx; (4) Tuberculosis of lung, liver and spleen of dog.

MEETING OF MARCH 31, 1897.

Dr. S. C. Busey, President, in the Chair.

The President said: I desire to call attention to a matter which, perhaps, does not directly concern the Society, but it is a matter of history which ought to be recorded. In 1872 Dr. Joseph M. Toner executed a deed of trust establishing a course of lectures to be known as the Toner Lectures, two of which were to be delivered in this city annually. He set apart for this purpose two lots of ground and certain funds, amounting, in all, to about $3,000. Only five lectures were ever delivered. These were by Dr. Woodward, Dr. Shakespeare, Dr. Brown-Sequard, Dr. W. W. Kerr and Dr. DaCosta. In 1878 I was a member of this Society and a member of that board of trustees, by virtue of holding the office of President of this Society. The records of the Trust are complete up to that point, but there they cease, and there is no record of any lectures having been delivered since then. It is certain that there have been none within the last four years. If the fund had been taken care of, as Dr. Toner intended it should, it would now amount to about $6,000. The board of trustees consisted of the surgeon general of the army, the surgeon general of the navy, the secretary of the Smithsonian Institution, and the president of the Medical Society of the District of Columbia, and himself as the fifth member. The last clause of the deed reads: "And it is further provided that in case of the failure at any time of the purposes for which this trust is created, or in case of the failure of the trustees to act for three successive years, or in case of the total failure of the trustees to give effect to this trust, then, and in any such contingency, the fund hereby provided for and created shall revert to the said party of the first part and his heirs or personal representatives." So that in fact and in law, this trust fund has lapsed seventeen years, and should revert to the heirs, and I, as one of the trustees, am required to sign a deed releasing this real estate, simply to clear up a clouded title. The heirs are already in possession of the property. The record of the trust is complete up to and including 1878, and since then there has been no record, but there is no doubt that the trust has lapsed and that the heirs are entitled to the property. I will, therefore, sign the deed, but I wanted to make a record of the facts before I did so. While I will sign this deed to clear the title to a

clouded property I have been led to believe that this money will eventually be devoted to some eleemosynary or charitable use in this city.

The following letter was read from the Surgeon General of the Army:

Washington, D. C., March 26, 1897.

Dr. Thomas C. Smith,

Cor. Sec'y Medical Society, D. C.

Dear Sir:—Please express to the Medical Society of the District of Columbia my appreciation of the action taken relating to the library of the Surgeon General's office. Should the proposition be renewed at any time I shall be glad to have the valuable assistance of the District Medical Society in defeating the measure, which is evidently opposed to the interests of the library and of the medical profession.

Very truly yours,

GEO. M. STERNBERG.

ALKAPTONURIA.

Case and Specimen. Preliminary report.

Dr. G. W. Johnston and Dr. Andrew Stewart presented a specimen of deeply pigmented urine, which had been passed by a patient under the care of Dr. Lowe and Dr. W. W. Johnston. The history of the patient threw no light upon the cause of the abnormal color.

Altogether three specimens of urine were submitted for examination. They were all of a dark, opaque, reddish brown color, and looked as if they contained blood. The specimen first passed (March 14, 1897) responded to all the well known tests for sugar: the other two (March 21 and March 28, 1897) did not. None of them contained blood. They were all lævo rotators. Upon examination of these specimens the pigments and chromogens, which could in any way account for the peculiar color were excluded: bilirubin, urobilin, melanin, melanogen, hæmoglobin, hydrochinon and brenzcatechin could not be demonstrated. It was therefore thought probable, that the case was one of Alkaptonuria.

Alkaptonuria is a term used to designate a state in which the dark reddish brown color of the urine is due to the presence of an oxyacid.

Boedecker, in 1859, first described alkaptonuria, and since then several cases have been reported. The condition, probably due to some anomaly of metabolism, occurs oftenest in children, frequently in several members of the same family, and has been found associated with a variety of pathological conditions, or may occur, and last a lifetime in perfectly healthy individuals.

The clinical importance of alkaptonuria centers upon the fact that the urine responds to some of the tests for sugar, and has, in a case known to us, led indeed to a mistaken diagnosis of diabetes mellitus.

Certain characteristics of alkapton urine were wanting in our specimen; and a substance isolated therefrom, according to Boedecker's method, failed to respond to all the classical tests.

It is probable that in the specimen here presented, the active coloring principle is also an oxyacid, differing slightly from homogentisinic acid or the acids described by others in connection with alkaptonuria. No other explanation for such pigmentation as this is possible.

Further experiments will be performed to determine the exact nature of the oxyacid present, certain of whose characteristics point to an identity with B. oxybutyric acid.

DISCUSSION.

Dr. E. A. deSchweinitz: I would like to ask Dr. Johnston how much lævo-rotation was noted; whether it was only very slight or was considerable,

Dr. Johnston: The first specimen was examined by the gentleman in charge of the clinical laboratory of John Hopkins Hospital and myself, and there was 2.35 per cent of lævo-rotation. The second and third specimens were examined by my associate, Dr. Stewart, and he found .02 per cent in the second specimen and 2.02 per cent in the third.

Dr. deSchweinitz: Was the polariscope used one that was graduated for the determination of sugar in urine?

Dr. Johnston: The first specimen was examined on the polariscope used in the clinical laboratory of Johns Hopkins Hospital,—I think a Miculitz,—especially for the determination of the amount of sugar in urine. The other two specimens were examined by the polariscope in the laboratory of the Department of Agriculture.

Dr. Stone presented the following specimens:

1. Fibroid of uterus. 2. Hydrosalpinx. 3. Pyosalpinx. 4. Tubal pregnancy, (containing fetus at fourth week.)

The fibro-myoma was presented to show how easily a growth between the folds of the broad ligaments could be elevated or enucleated by what is known as the "Keely method." The tumor is thus approached from below, and the ureter and pelvic vessels are avoided.

The other specimens illustrate the method used by Dr. Stone, by which such large ones could generally be removed without rupture.

The hydrosalpinx has exceedingly thin walls and required the gentlest manipulation to avoid rupture during its removal. The tube, containing a small fetus, was accidentally discovered before rupture. It can be seen that the greatest distension is on the upper and posterior surface, showing that if rupture occurred the fetus could not get between the folds of the broad ligament. In the removal of the last three specimens, the tube was first cut away from the uterus, and afterwards enucleated from the broad ligament or other adherent surfaces.

DISCUSSION.

Dr. J. Wesley Bovee: I would like to say that I hope the Society will not be led by Dr. Stone's cases into the belief that all pus tubes can be removed without rupture. It is true that these particular cases were removed without rupture, but Dr. Stone does not tell us that all cases can be removed without accident. In all such operations the aim is always to use as much gentleness and as little force as possible. If we cut off a Fallopian tube at the uterine end—or, for that matter, begin work at the opposite end and work along it to the other end of the pus accumulation by gently cutting it away from the broad ligament—we can very often succeed in getting the sac out without rupture. On the contrary, there are a great many cases that cannot be so removed. I have seen cases of pyosalpinx, in which the pus had burrowed two or three inches along the bowel under the peritoneum, and to remove such specimens without rupture would require resection of the intestine, a feat in surgery that none of us wish to do for such a purpose. Again, there are quite a number of pus sacs that rupture into other organs. Suppose an attempt to remove such an accumulation is made just before it has so emptied. To remove it without rupture would be practically impossible. I think the old method of removing the appendages by the single or double ligature is not nearly as good as dissecting off the tubes from the top of the broad ligaments, removing them with the ovaries, and ligating the arteries separately. Then the top of the ligaments is to be closed by running sutures, and the uterus stitched to the abdominal wall.

DISCUSSION ON DR. WALTER WYMAN'S PAPER ON "THE PLAGUE."

Dr. George M. Sternberg, Surgeon General, U. S. A., said: The conclusion reached by Dr. Wyman that we are practically safe from an invasion by the plague is probably justified, although

there are no doubt many places even in the city of Washington where, if the plague bacillus were introduced, the disease might assume dangerous proportions. In the better parts of this and other cities having paved streets and sewers, it is doubtful whether plague or cholera or yellow fever would extend even if cases were introduced. But in our alleys, many of which are not paved, and where a large number of the houses are without sewer connections, the conditions would be favorable for the extension of any one of these pestilential diseases during the favorable season.

No doubt one of the conditions most favorable for the spread of plague is starvation, and fortunately this is a factor which hardly exists in our country. While we know the conditions favorable to the development of an epidemic when the specific bacillus is introduced, it is somewhat difficult to explain the fact that as a rule such epidemics have a limited duration. According to Dr. Wyman seven months is about the period during which an epidemic of plague is sustained. After that time it manifests a disposition to die out. This may be because man is not one of the most susceptible animals. Rats, which are very insusceptible to most infectious diseases, are very susceptible to the pathogenic action of the plague bacillus, and it has often been noticed that a fatal epidemic prevails among rats before the outbreak of an epidemic of plague in man. Probably the attenuated plague bacillus is widely distributed in the districts which are the endemic seat of this pestilential disease. It may be that this attenuated bacillus has sufficient virulence to kill mice or young rats, and that older rats become infected, especially in times of scarcity of food, by feeding upon the earlier victims.

In accordance with the general law which has been established by laboratory experiments, the bacillus would be likely to acquire increased pathogenic potency by being passed through a series of susceptible animals; and finally this may increase to such a point that it becomes fatal to man, and especially to those whose vital resisting power is reduced by starvation and insanitary surroundings. Then we may suppose that having destroyed the rats, and a considerable portion of the most susceptible persons residing within an area of epidemic prevalence, the bacillus gradually loses its virulence and the epidemic dies out. There is reason to believe that one cause for the spread of the disease is to be found in the fact that in countries where it prevails, the dead are often buried in very shallow graves, and the bodies of those who have died of plague may be partially eaten by rats either before or after burial.

Dr. George M. Kober: General Wyman has already told us that there is no record of the plague having ever gained a foothold in this hemisphere, but the natural history of the disease is always interesting, because of the frightful ravages of the plague in the past, and the possibilities in the future. It is true that with our present sanitary environments we are never likely to again witness the scenes of the plague between the 14th and 16th centuries, nevertheless we should remember that a few months ago there were introduced into London from the Orient a couple of cases which presented all the symptoms of bubonic plague. It is interesting at this time to refer to the views that were held in the middle ages regarding the plague. The majority of people, of course, regarded it simply as a dispensation of Providence, an evidence of Divine wrath, which they hoped to allay by offerings and by chastising themselves, and the Order of Flaggelants, and the Passion Play of Oberammergau originated about this time. The faculty of Paris attributed the epidemic to the conjunction of planets on a certain day in 1345, and even the faculty of the University of Leipsic gravely announced that the plague was due to earthquakes, inundations, etc. Venice, alone, took a sensible view of the matter, and in 1348 appointed a board of public health, and later established rules for the isolation of persons infected with the plague for a period of forty days. This gave rise to the term "quarantine," from *quaranta giorni*, signifying forty days. We now know tha the disease is due to a specific bacillus but that it especially attacks person

living in badly ventilated houses, surrounded with filth, and subsisting upon unwholesome and insufficient food, together with the effects of excessive moral and physical misery. Create the environments necessary for the development of this specific virus, here or in Europe, and the scenes of the middle ages might be re-enacted in our own time. From the 14th to the 17th century was the most unsanitary era in history. Houses and towns were built in compact forms, surrounded by walls for defensive purposes; the streets were narrow for the better defense of the town; family filth was deposited on the streets, and stables were built in close proximity to the houses. The unsanitary condition of the towns may be imagined from an ordinance which was published at Muhlberg in 1367, declaring that manure, deposited by householders on the market space, must not remain longer than two weeks. The dead were buried within the church yards and the inhabitants were compelled to resort to wells with polluted subsoil water. In Madrid not even a privy existed as late as 1760. Human excreta was thrown out of the windows at night and removed by scavengers the next morning. With such unsanitary surroundings it is not remarkable that the plague should spread when it had once gained a foothold. Nor need we wonder that the average duration of human life in the 18th century was only 13 years, while now it is over 40. Plague, like many other preventable diseases, has caused much criticism of the profession; many declare if it is a preventable disease why is not the present epidemic in the Orient promptly stamped out, but it should be remembered that overcrowding, famine and general impoverishment are social states often so gigantic as to be beyond the control of the sanitarian.

Dr. C. H. A. Kleinschmidt: A few years ago, in going over the library of Georgetown College, I came across a book which contained a point of great interest in connection with the plague. It showed that during the middle ages everybody did not connect the plague with a dispensation of Providence. A Jesuit, named Scheiner, threw out the idea that the disease was due to a living organism. He thought that the maggots on the corpses on the streets were the cause of the plague. He was a physician and a priest combined, and went to Rome and studied the disease there, and came to the conclusion that plague was due to a living organism.

MEETING OF APRIL 28, 1897.

Dr. S. C. Busey, President, in the Chair.

Dr. D. S. Lamb presented the following specimens:

1. Spina Bifida.

Dr. Lamb said: I have here a colored, female, human fœtus at term, showing spina bifida. In the dorso-lumbar region of the spine is a large, dark, oval projection which if dissected, would show the three primary portions of each vertebra, namely the body and laminæ; instead of forming a closed canal as they should they lie together in the same transverse plane as shown in this skeletal preparation. Very likely the spinal cord is entirely absent from this part since this is usually the case. There is also a shortening of the neck, the head being crowded down on the shoulders and bent backwards. This condition of head and neck is probably due to a fusion of the cervical vertebræ together; since such fusion will cause the shortening described as well as the retroflexion.

By comparing the wet specimen and the dry, it will be seen that spina bifida is only a minor degree of a more extensive malformation often met with, called by some teratologists "rachischisis"; a posterior fissure of the entire axial part of the embryo; when it involves the skull, called cranio-rachischisis. When we recall the early stages of development of the human embryo, it is easy to understand that weatever interferes with the

closure of the original medullary groove will cause this malformation, in greater or less degree. Since in development, the embryonal axis undergoes several flexures, most sharply marked in the cervical and lumbar regions, we find the malformation occurring most often in these regions, although the entire canal may be involved. It would seem to be a necessary requirement that such malformation occur at such early period in human embryonal life as would antedate the normal closure of the groove into a canal; this closure occurring about the time at which the amniotic fold completely envelopes the embryo, namely about the end of the second week. It seems certain that no internal or external disturbance, no maternal impression can cause such malformation after the second week, and that any explanation of injury or fright or other occurrence in the life of the mother, or subsequent date, must be rejected.

To cause such malformation it would seem to be necessary that there should be an unusually large quantity of fluid at some point in the medullary groove or incipient canal, whereby the canal would be subjected to pressure from within outwards; this pressure preventing the normal closure. This is the older theory and until recently largely accepted. Or there may be pressure from outside, as from an amnion which is more tense than usual; this tension exercising pressure and thus preventing the closure; the pressure being most marked of course at the embryonal flexures. This opinion is still held by some teratologists. VonRecklinghausen believes that there is an early defect in the blastoderm, a primary aplasia, as shown in the fact that along with the imperfection in the bones, there is also imperfection in the connective tissues, muscles and integument of the same part. If we accept the theory of VonRecklinghausen, perhaps to be consistent, we should also believe that the original ovum cell, either before or after fecundation, contains not only the potentialities of the future embryo, but also is sufficiently complex to contain the individual germ of each tissue or region. The experiments of Hertwig on the ova of *siredon pisciformis*, which consisted in subjecting the developing ova to the influence of a six to seven p. c. saline solution, resulted in the production of malformations corresponding to anencephalus and spina bifida in the human embryo. The effects of the exposure were limited to the nervous system, that is to say to the cells of the epiblast which give rise to ganglion cells. He suggests that chemical substances, alcohol, toxins and medicines circulating through the mother's system may produce in the human embryo similar effects, by interfering with development. The fact that the effects were limited to the nervous system is very interesting; it would seem that the heart and blood-vessels being of mesoblastic origin more readily escape, are probably better protected. Since the development of the embryo depends almost if not entirely on the circulation, and therefore to a great extent if not entirely is independent of the nervous system, we can understand how in these cases of anencephalus and spina bifida, the rest of the body is so completely and beautifully developed. No fœtuses are better developed in other respects than are those in which the cerebro-spinal system is entirely absent. I think that we may confidently believe, in view of this want of dependence on the nervous system, as well as the fact that there is no nerve communication so far as we know between the mother and embryo, that maternal impressions, if able to cause malformations at all, must do so through

some chemical change in the blood, and at such time in the life of the embryo as corresponds to the developmental character of the malformation.

I wish to add that I know of a case in which, by the same father, but by two different mothers, there were three children, or rather one child and two miscarriages, at four and five months, each showing a spina bifida.

II. Hemorrhage and Softening of the Brain.

I have also a specimen of the left side of the brain, showing many hemorrhages under the pia mater and many hemorrhages and softenings in the cortex of the parietal portion, and a large hemorrhage and softening in the white mass above the lateral ventricle. There is thrombosis of the cerebral veins of this region. The blood-vessels themselves appear to the naked eye as normal. The heart was normal and there is no embolism. The sinuses of the dura were not thrombosed; if they had been the effect would have been bilateral, whereas the right brain was normal in all respects. There was no history and no evidence of specific disease. There was no marasmus; The woman was well nourished. There was no disease besides that in the brain, except some small cysts in each ovary and a possible enlargement of the lymphoid follicles of the spleen. There was in fact no sufficient cause, to my eye, for the thrombosis. The woman was only 18 years old, was apparently in excellent health and the body showed that she had taken good care of herself. There was no history and no evidence of injury to the head. She had had some gastric disturbance, occasionally, for several months. The day before her death she seemed as well as usual and worked as usual. Afterwards she had headache followed by a furious delirium; was taken to a hospital, became unconscious, was paralysed on right side and died in a few hours—in all about 30 hours from the initial attack. The lesions are interesting in view of the youth of the subject; although I cannot explain satisfactorily the sequence of events. There has as yet been no microscopical examination.

Double Pus Tubes and Appendicitis.

Dr. J. Wesley Bovee presented a specimen of double pus tubes and appendicitis, demonstrating the coexistence and probable relation of them. The pus tubes were removed in one mass and attached to both of them behind the uterus was a very large and infiltrated vermiform appendage. The specimen had been removed from a colored woman, 32 years of age, on the 17th of March, last.

He also presented specimens showing conservative surgery of the fallopian tubes and ovaries. From a case of double hydrosalpinx and cystic degeneration of the ovaries; he had broken the adhesions behind the uterus and appendages and resected one ovary and tube; the ovary was resected by scissors and fine catgut was used in closing it; the tube was resected and the end slit up 1 c m.; the peritoneal and mucous coats were then stitched together. This left a functionating tube, as the permeability of it was proven by the passage through it of a small probe. The other appendage was too badly diseased to be treated in this manner and was removed; ventrosuspension of the uterus was done with kangaroo tendon and the abdominal wound also closed by the same material in continuous, subcutaneous suture. Both cases recovered nicely.

ORCHOTOMY. OESOPHAGOTOMY. APPENDICITIS.

Dr. Arthur Snyder presented the following specimens with histories of the cases:

Case I. Orchotomy. John L., aged 63.

Feb. 20, 1897. Was asked by the attending physician to relieve Mr. L. of retention of urine due to enlarged prostate.

Feb. 26. Perineal section with permanent drainage performed, expecting to cause atrophy of the hypertrophied prostate by the pressure of the hard drainage tube. Bladder irrigated twice every day with hot Thiersch solution.

March 7. Drainage-tube removed.

March 10. Drainage-tube replaced, because the bladder became distended with urine in spite of the perineal wound; residual urine foul.

March 15. Removed drainage-tube again; urine improved.

March 17. Operated upon a large mass of hemorrhoids, believing that they might have some reflex action about the neck of the bladder; dilated the perineal wound and the passage through the prostate; replaced the hard drainage-tube; urine foul.

March 20. Drainage-tube removed and replaced after some difficulty by a soft catheter.

April 9. Orchotomy. Chloroform anæsthesia. Left testicle enlarged to the size of a large fist, believed to be syphilitic, but Dr. Reed, U. S. A., found it to be due to an old injury.

April 11. Micturated once. Six oz. residual urine.

April 13. Micturated twice. Four oz. residual urine. No. 10 soft rubber catheter easily slipped into the bladder through the urethra, and the irrigation performed.

April 16. Urinating easily, perineal wound nearly closed. Stopped bladder irrigation.

July, 1897. Patient reports in excellent condition.

Case II. Appendicitis. Annie R., white, age about fifteen.

Feb. 2, 1897. Saw her first and thought it was clearly a case of appendicitis; as her condition was so good and temperature 99°, an operation was not advised.

Feb. 7. Condition becoming more marked and worse; she was sent to the Garfield Hospital for operation, as temperature, pain and tympanitis have increased and her knees are flexed. Digital examination of rectum gave a thickening high up.

Operation, ether anæsthesia. Before operation a digital examination of the vagina gave a boggy feel as of a pelvis full of pus, and had she been older and the parts larger, the operation could have been easily performed.

The usual incision and separation of the muscular fibres of the abdomen made and peritoneum opened; intestines adherent, walling off the pelvic abscess; a pocket on the left side opened and pus escaped, with the finger tore through adhesions of the right side and emptied the abscess of over a pint of pus. Incision was enlarged downward and inward for an inch. The cæcum had been carried inward; the appendix turned back behind the cæcum, directed upward and inward; it was hard to find in spite of its being as large as one's thumb and closely resembling a pus-tube; it was ligated, and being so soft the silk ligature cut completely through. The abdomen was repeatedly flushed with hot salt-solution; glass drainage-tube introduced after having in the abdomen as much salt-solution as it would easily contain, then secondary silk-worm sutures put in place, and the usual dressing.

Oct. 9. Discharge of pus into the vagina; warm Theirsch solution irrigation twice a day. Glass drainage-tube removed and abdominal wound closed.

Patlent made a steady recovery.

This case is of a special type because of the long period of mild symptoms; the large pelvic abscess, the physical signs of which were so easily made out under anæsthesia, and, but for her age and size, drainage through the vagina would have been effective.

Case III. Oesophagotomy.

Patient swallowed a broken dental-plate holding a central incisor tooth, which was believed to have lodged in the throat. Complained of pain; inability to swallow solids; fluids swallowed with difficulty and pain; loss of voice; located a painful area.

On examination a foreign body was located five and one-half inches from teeth, by means of flexible probe: operation advised and gladly accepted. Operation performed and the plate and tooth removed; wound lightly packed and usual dressing. Rectal nourishment for two days; then given milk, ice-cream and water ice; wound dressed twice a day because of mucus, and boric acid—which she swallowed often to irrigate the wound and wounded œsophagus—rendering the dressing wet.

Patient steadily improved and was discharged cured.

THE INFLUENCE OF SCHOOL LIFE UPON THE HEALTH OF CHILDREN.

By William W. Johnston, M. D.

The report of the United States Commissioner of Education for 1892 and 1893 (1)* shows that, at that time, there were 19,552,491 persons in this country between 5 and 18 years of age. Of these 13,510,719 were enrolled in the public primary, grammar and high schools. The value of school property was $398,435,000; to support this enormous establishment the average expenditure per capita of population was $2.47. Hartwell (2) says that in 1894, 90 per cent of the population of Massachusetts, between the ages of 5 and 15, attended school; this number exceeding by 80,000 three times the number of persons of all ages engaged in agricultural pursuits in 1885, and falling but little short of the total number of those occupied in all the manufacturing industries of the state in the same year.

The influence of education upon health is not a new subject. Whether the school system of the United States has a favorable or unfavorable effect upon health is undetermined. Directly contrary opinions are held both among the laity and the medical profession of this country.

No serious effort has been made in this country, so far as I am aware, to gather such an amount of precise information, as would be sufficient to serve as a basis for correct judgment. For scientific and thorough investigations into the health of school children we must turn to Europe, and particularly to the monumental work of Hertel in Denmark and Axel Key in Sweden.

Why Investigations were Undertaken in this Country and in Europe.

As education became more widely disseminated and as the standard, in all grades of schools, was raised and greater demands were made upon the pupils, physicians in this country and Europe

*The figures in brackets in the text refer to the bibliography at the end of this article.

began to observe a variety of morbid phenomena in school children that they believed to be due to the conditions of school life. Interest in the subject in Europe gradually became more intense, until 1877, when Finckelburg addressed the Congress of Hygiene in Nuremberg upon the injurious effect of excessive brain work upon youth (3). Immediately after this, congresses, academies, parliaments and commissions inaugurated investigations into the health of school children, and later, journals began to be published devoted solely to this topic.

How and Where Inquiries were Conducted.

Many of the investigations pursued in European States were limited to the eye sight, or were of a personal character, and restricted in scope. But there were at least five series of investigations that were far reaching and three of these were very careful and complete.

These five arranged according to date were:

1. Hertel's investigations in Denmark, 1881; (4).

2. Danish Commission (Hertel), 1882; (4, 5).

3. Swedish Commission (Axel Key), 1883; (6, 7).

4. British Parliamentary Commission (Crichton-Browne), report published in 1884; (8).

5. Warner's investigations in England, reported in 1892; (9, 10, 11, 12, 13, 14, 15, 16).

The facts collected in these five investigations give information as to the health of 104,629 school children (62,332 boys and 42,297 girls), of different ages, of all social conditions, rich and poor, from city and country.

6. Additional important inquiries were undertaken by Combe (17) in Lausanne in 1892; 3,650 children in all being studied.

7. Nesteroff (18, 19). in Moscow, 1890, 216 children.

8. Zahor in Prague, 1888, 1889, 1890, 4,892 children (Zeitschr. für Suchulgesundheitspfl., Hamb. u. Leipz., 1892, v, 557.

9. Hakonsen-Hansen's preliminary report of the Norwegian Commission under Faye and Hald, pub. 1894, (20, 21).

Methods of Inquiry.

The methods pursued in these different investigations varied in different countries. In England, where the examinations were conducted with the idea of combining accuracy with economy of time, scholars were subjected to inspection while at work and play, and both they and their teachers were questioned. This plan is open to criticism and the unfavorable comments of the chief inspector of schools who accompanied Crichton-Browne, seem to be not without justice.

In Denmark and Sweden it was accuracy without economy of time which dictated the method of inquiry, and the plans were essentially the same in the two countries, and were very detailed and complete. Printed blanks containing questions as to each child's health, the amount of study at home, the character and duration of sleep, etc., were sent to the parents to be answered. The information thus obtained was submitted first to the family physician and then to the child's teacher for criticisms, corrections and additions, and afterwards the child's eyesight was tested and the weight was ascertained. These studies were made in November and December in Denmark, and in February and March in Sweden. The periods chosen were neither at the beginning of the school year, when the pupils were refreshed by their summer holidays (of ten weeks duration in Denmark and 16 weeks in Sweden) nor at

the end of the session after the fatigue of the year's work.

In a doubtful case the child was called well, and no incidental acute illness was included.

Investigations in the United States.

Interest in the health of the school children of the United States was awakened when the subject began to be accurately and scientifically investigated in Europe. In a short time considerable enthusiasm was shown in different localities, particularly in Michigan, Wisconsin, Maryland and Massachusetts, but it soon died out with the exception of a few spasmodic revivals.

Numerous articles bearing on the question have appeared from time to time in medical journals, reports of school boards, of boards of health, in text books of medicine and hygiene, pedagogical journals, and in the reports of the United States Commissioner of Education. These articles with few exceptions have been of a general character, and do not include observations on any extended scale.

The school children of the country, in some localities, have been weighed and measured, and several investigations into eye conditions and a very few inquiries of a more general character have been undertaken; but as far as I know no thorough examination of the state of health of pupils in American public schools has been made. In a few instances circular letters have been sent out by individuals to physicians, superintendents of schools, members of school boards, and the clergy and from the replies received an effort has been made to reach some exact conclusions. The answers were, however, simply expressive of individual opinion, and the method lacked comprehensiveness and thoroughness. The number of scholars studied was small, and the answers to the questions vague and lacking in scientific precision; the accumulated data and conclusions were therefore of no great value.

Facts ascertained by inquiries in Europe.

The European investigations showed very clearly that there was a surprising amount of ill health among school children, that the percentage of morbidity varied slightly in different countries, and that girls suffered more than boys.

Thus in boys schools in England there was found a morbidity of 20.7 per cent, (Warner); in Denmark, 29 per cent, (Danish Commission); in Copenhagen, 31.1 per cent, (Hertel); and in Sweden, 37.2 per cent, (Swedish Commission.)

In girls schools there was discovered a morbidity in England of 15.6 per cent, (Warner); in Copenhagen, 39.0 per cent, (Hertel); in Denmark, 41.0 per cent, (Danish Commission); in Lausanne, 42.9 per cent, (Combe), and in Stockholm, 61.7 per cent, (Swedish Commission).

In arriving at these figures, accidental or acute illness and short sight were excluded. As a rule morbidity was greatest among the scholars of the better social class.

A number, of chronic conditions varying in degree from slight deviations from the normal state of health to actual disease, made up the sum total of morbidity.

The following conditions found in Denmark and Sweden were considered abnormal and formed the basis for the estimation of a morbidity percentage; chlorosis, epistaxis, anorexia, nervousness, headache, short sight, other eye affections—excepting ophthalmia—spinal deformities, scrofula, etc.

In England, Warner discovered defective development, abnormal "nerve signs" low nutrition, mental dullness, "eye cases" (ophthalmia excluded) lateral curvature of the spine, etc.

Crichton-Browne, in the London elementary schools, bases his statistics upon

the presence of nervous disturbances, habitual headache, sleeplessness, muscular twitchings, stammering, neuralgia, short sight, squint, etc,

According to Hakonson-Hansen the principal defects among the girls of the Christiania (Norway) schools, were found to be anemia, neurotic conditions, headache, chronic digestive disturbances and spinal deformities.

Facts Ascertained by Inquiries in the United States.

Examinations into the morbidity of the school children of the United States have been so few and so fruitless that the superintendent of physical training in the Boston public schools was able to say without fear of contradiction as late as 1894, that we have no knowledge whether school life is beneficial or prejudicial to health, since no one has taken the pains or been paid to find out. He continues: "It is scarcely too much to say that it would be easier under the present conditions to estimate the losses entailed by hog cholera or cattle plague throughout the Union, than to determine the number of children who succumbed annually to school diseases in the United States." Hartwell (2). Whenever investigations have been made in this covntry the conditions found have been similar to those in Europe.

Relation of these Variations from Health to School Life. Are they Constant, and are they Due to the Conditions of School Life?

The same morbid phenomena have been met with so repeatedly in the different inquiries undertaken that they may be said to be constant accompaniments of school life, and Key calls chlorosis, nose bleed, headache and myopia true school diseases. In certain schools in the south of Scotland, where the children lived and worked amid the most favorable surroundings, the same varieties of ill health were observed by Crichton-Browne, though with less frequency and in a less pronounced degree than in less favored localities.

a. Contral experiments.

As pointed out by Burgerstein (6)—who translated Axel Keys reports into German—we cannot fix upon a normal percentage of morbidity because we cannot find a number of children brought up under ideal circumstances or in an ideal environment. Since nearly every child of school age goes to school, there are not a sufficient number of children out of school for control observations. It makes but little difference whether the health of school children is better or worse than in the case of those who do not go to school; it is bad enough and should be made better; the condition exists and it is our duty to remedy it.

b. Relation of morbidity to age and progress from class to class.

To aid in determining whether the ill health constantly found in school children is due to the conditions of school life, it will be well to study the relation of morbidity to age and the progress from class to class.

All observers agree that morbidity increases with age and more particularly with progress from class to class, and statistical corroboration of these facts is abundant and strong. The results of the investigations of the Swedish Commission, arranged by Key in the form of a curve, and the combined results of the Danish and Swedish Commission and of Hertel's personal inquiry, similarly arranged by the latter, illustrate these points most graphically. The reader is referred to the reports of Key and Hertel since these curves are too complicated to be introduced here.

It has been demonstrated thus far that:

1. In Europe there is considerable ill health among children who attend schools.

2. Wherever and whenever investigations have been undertaken the same diseases and deviations from normal health have been constantly found; and

3. The percentage of morbidity increases with age but more particularly with progress through classes.

For further inquiry let us select certain conditions that from the physical characteristics of our people, are likely to be met with in this country, (and in regard to some of which observations have been made in the United States), and try to discover to what extent these conditions are met with among European and American school children, and how they are aggravated by school life.

The Eye Sight.

The prevalence of near sight and its increase with age and with progress from class to class in the children of European schools has been noted by a large number of observers. The Swedish Commission found an increase in near sight from 6 per cent in the lowest to 37.3 per cent in the highest classes of certain boy's schools, and this increase was always found to bear a direct relation to the length and amount of study. In girls' schools the same investigators found a gain in near sightedness from 7.1 per cent at eight years of age to 57.1 per cent in the 22d year or over. Seggel (31) noted an increase of near sight from 16.5 per cent in the 1st to 54 per cent in the 8th class of the Munich intermediate schools. In the London elementary schools 2.5 per cent of the scholars in the 1st class and 9.2 per cent in the 6th class were found to be near sighted.

Cohn of Breslau (22) whose name is familiar to all opthalmologists, maintains:

1. That myopia increases with the demands made upon the eyes.

2. That the number of short sighted scholars increases regularly from the lower to the higher classes in the educational institutions.

3. That myopia not only becomes more common, but worse in degree with advance from class to class.

In an examination of 10,000 children of all grades he found:

1. In country schools 1 per cent of short sight.

2. In elementary schools 5.11 per cent.

3. In grammar schools 20.40 per cent.

4. In colleges 30.35 per cent.

5. In University of Tubingen 79 per cent.

In 1896 Carter (23), among 8,125 children in the London schools, discovered that but 39.15 per cent enjoyed normal vision. Numerous other authorties could be quoted if necessary to prove that near sight exists in European schools, and that it increases in frequency and degree as pupils advance from the lower to the higher grades.

In the United States many opthalmologists have examined the eyes of many thousands of school children, and there is an abundant literature upon this subject. The results obtained by different investigators agree with each other and are, in many respects, similar to those observed in Europe. According to D. B. Smith (22) in children under 6 myopia is rare. From 7 to 12 years it increases 1 per cent a year; from 12 to 14 years, 4½ per cent a year; from 14 to 18 years of age the percentage of increase is greater.

Examinations made in the Cincinnati schools (17) showed an increase in near sight from ten per cent in the intermediate to fourteen per cent in the high and sixteen per cent in the normal schools. In Memphis short sight was found to increase from almost nothing in the lowest to fifteen per cent in the highest classes.

In Columbus the increase was from

almost nothing to 11.3 per cent at seventeen years.

A similar condition of affairs was found in Kansas City and elsewhere.

In Circular of Information No. 6 of the U. S. Bureau of Education (1881) Calhoun (24) says that the report of the examination of 45,000 school children in the U. S. irrespective of age, sex, color, in city and country, show that near sight increases from nothing in the lowest to 60 to 70 per cent in the highest classes (sic).

The grade or degree of near sight increases as well as its frequency. Many more facts could be brought forward in proof, but those quoted are sufficient to show that school life has a deleterious effect upon the eyes of children.

Diseases or disturbances of the nervous system. Nervousness, nerve instability, neurasthenia.

Nesteroff (18) studied the school children of Moscow with a view of determining if diseases or disturbances of the nervous system existed and how they were influenced by school life. Examinations extending over four years showed 29.25 per cent of the children in the schools thus affected. No distinctive disease marked by typical objective signs was met with, but the pupils were found to suffer from general disturbances of the nervous system chiefly neurasthenic in character. There was headache, (especially at the end of the day's lessons) with sleeplessness, gastralgia, peripheral neuralgias—mostly intercostal—neuroses of the heart (palpitation), rapidly induced psychic and mental weariness, accompanied by irritability and excitement, and in older pupils neuroses of the sexual apparatus.

Nesteroff's data show conclusively that these diseases or disturbances of the nervous system increase with age and with progress through classes—e. g., from 8 per cent in the 1st to 69 per cent in the 8th class, and from a little over 8 per cent at 10 years of age to nearly 78 per cent at the age of 19.

Warner has investigated the same subject in England. In about 11 per cent of the children examined he noted certain abnormal "nerve signs." These consisted in instability in posture, in balance of hand, head and back; loss of tone in the orbicular muscle of the eye, finger twitching; stammering, numerous small movements, occurring without apparent stimulation, and muscular eccentricity closely bordering on chorea.

The frequency and severity of nervous diseases in school children is further proved by the reports of the Registrar General of England (2), which shows that while deaths from zymotic diseases in children has considerably diminished, the morbidity from diseases of the nervous system has remained stationary.

In Massachusetts the proportion of deaths from diseases of the nervous system to deaths from all causes increased in the decade 1880–1890.

Among the public school children of New York city, Hamilton (25), in answer to inquiries, ascertained that 20 per cent of the pupils in the primary schools (average age 7 years) and two per cent of those in the grammar schools (average age 12 years) twitched their hands, faces or one side of the body. His observations show that contrary to the conclusions of others, there is a lower percentage of nerve disorders in the higher grades.

Lincoln (26), Folsom (26) and others, describe the familiar nerve—sick school child, but add nothing to our knowledge of the prevalence of nervous disease among the pupils in our schools.

Headache.

Is headache met with in school children and does school life increase or di-

minish its frequency and severity?

Inquiry by Guillame in Paris, and Becker in Darmstadt, by Faye and Hald in Germany and others, (26, 8, 20) have shown that from 40 to 50 per cent of the scholars in public schools suffer from habitual headache due to brain exhaustion from school work.

Of 6,580 pupils in the London elementary schools 46.1 per cent were found to be affected with habitual headache by Crichton-Browne. These headaches were of an anemic or neurasthenic type, the latter predominating, and were usually frontal. Girls were more often affected than boys.

It was found that there was an increase in habitual headache in relation to classes from 40.5 per cent boys and 46.2 per cent girls in the first class to 42.9 boys and 70.6 per cent girls in the sixth class.

This same thing was observed by Key in the preparatory schools of Stockholm where there was an increase from 2.2 per cent in the first to 11 per cent in the fourth class, and from four per cent at eight years of age to 44 per cent at the age of thirteen.

According to Crichton-Browne, the headache of high school girls begins with the school term, grows more frequent and intense as it progresses, and disappears in the holidays to reappear with the beginning of school life.

The same effect of alternate work and rest was noted by this same observer in the children of the London elementary schools who suffered from habitual headache. In the morning 12.4 per cent of the scholars had headache; in the afternoon 22.3 per cent, and with the evening's rest the percentage fell to 11.4.

Nesteroff observed similar headache in Moscow school children at the end of the days lessons.

The facts already mentioned are corroborated by the results of investigations undertaken by Bystroff (26) in St. Petersburg. Among 7,478 school children 5 per cent of those at 8 years of age suffered from so-called school headache, and this increased to 28 to 40 per cent between 14 to 18 years.

No data have been obtained as to the prevalence of headache in the school children of this country. Hamilton (25) sent printed blanks to the public schools of New York city; from the replies received he asserts that 10 per cent of grammar school and 15 per cent of primary school children have headache. In this instance we have the opposite of what has been always found elsewhere, namely, the existence of more headache in the younger children and lower classes.

I know of no other investigations on this subject in this country.

Sleep.

Sleeplessness, sleep talking and sleep walking, as accompaniments of neurasthenia, have been shown to be not infrequent in school children, and to be due to the conditions of school life. Crichton-Browne, notes that 38 per cent of the pupils in the London elementary schools suffer from sleeplessness, the boys showing a higher percentage than the girls; also, in one school of 381 boys he found 129 sleep talkers and 28 sleep walkers; in one school of 432 girls there were 17, and in another school of 382 girls, 20 somnambulists. This observer learned that parents frequently complained to teachers that their children talked of lessons in their sleep, and arithmetic and sums seemed to be the chief disturbing element.

Suicide.

In Prussia between the years 1883 and 1888 (Zeitschr. fur Schulgesundheitpfl, 1892, v. 229) 289 pupils in the schools committed suicide, of whom 179 or more than one-half were in the lower classes.

Fear of examination or failure to be promoted, quarrels with teachers, morbid ambition, fear of punishment, and other incidents relating to school life, were the causes assigned by 121 of those who destroyed themselves. There is no note of such a tendency in this country, at least none upon which any reliance can be placed.

Increase of mobidity with increase of the number of hours of study.

In the Swedish and Danish inquiries the greatest care was taken to insure accuracy in determing the effect of the number of hours of study upon morbidity. The scholars were taken in small groups and every possible source of error was eliminated.

In Sweden it was found that the morbidity was 5.3 per cent higher in those who worked over the average time, and in Denmark, seven per cent. In those schools which made more than the usual demands upon the students, the per cent of sick children exceeded the average per cent of morbidity by from three to ten per cent in some classes. In the Stockholm schools, especially burdened by work, the per cent of those in bad health exceeded the average morbidity from four to seven per cent. Moreover, it was ascertained that the morbidity increased pari passu with the number of school hours.

One cannot fail to have been struck, from what has gone before, with the dissimilarity between the general amount of ill health in the schools of Sweden and those of Denmark. To emphasize this point it is only necessary to compare the statictics obtained by the Swedish and Danish observers, which show that the morbidity among boys in Denmark is twenty-nine per cent and in Sweden thirty-seven per cent; while among girls in Denmark it is forty-one per cent and in Sweden 61.7 per cent.

I was myself at a loss to account for this, until I ascertained that the demands upon the scholars time were greater in Sweden than in Denmark. In each country about four hours of study daily, are required of the lower classes, while in the upper classes of Denmark nine to nine and a half hours, and in Sweden ten to eleven hours, are necessary. In girls schools the number of hours spent in study is far greater in Sweden than in Denmark.

In the United States the relation between the number of hours spent in study and the amount of ill health, has been investigated by competent medical men in the high schools of Cleveland, Ohio, and the results placed on record (26). These results make it quite clear that appetite, sleep, headache, backache, eye-sight, menstruation and general health were affected in direct proportion to the amount of study in hours.

There was nothing peculiar to the Cleveland high school at this time; the course of study and other conditions of school life were like those existing elsewhere.

We have, as has been seen, but few data upon which to form an idea of the amount, of ill health in our American schools. We have enough to show, however, that if the amount of necessary study is a factor in producing or increasing morbidity, we had, at the time all these investigations were being conducted, no advantage over Europe, indeed we were at a disadvantage compared with the old world.

In the high schools in Michigan in 1882 thirteen hours of solid brain work were required daily (27). The Ann Arbor high schools in 1882 demanded eight hours study a day for six days, beside the time spent in recitations.

Decrease in Attendance-Causes.

It may have been observed in some of

the percentages that have been quoted that the number of scholars has diminished and the curve of morbidity declined in the last years and in the highest classes of the various schools investigated. The diminution in the size of the classes by the departure of those who left school to enter higher educational institutions or business, would have affected the morbidity percentage, if at all, by increasing it, the strong and successful going out, sickly and backward remaining behind. This therefore cannot account for a descending morbidity curve at the end of school life. The true explanation is that the delicate and ill have fallen out, unable to keep up in the race, and the strong and lusty are left behind at school.

The robust health enjoyed by girls and young women in certain of our colleges, in spite of the severe tasks imposed upon them, is frequently used as a basis for an argument, thought to be convincing and unanswerable. It is maintained, that, because they enjoy good health, therefore there is no overpressure in our schools, and nothing wrong with our system of education. This argument is fallacious. No account is taken of the many who have collapsed in the struggle of school life. Our higher colleges for girls are attended by the fittest who have survived in this struggle.

Faye and Hald (21) have proved that the apparent increase in the health in the highest classes of the Christiania (Norway) schools is due to the elimination of the sick and fragile. In spite of this withdrawal they maintain that thirteen per cent of the picked girls who remained in school until graduation left it hampered by broken health of greater or less severity. Burgenstein (6) and others note the same thing.

But further European statistics are unnecessary, since the decrease in school attendance by reason of illness, and its cause overpressure, is brought home to us by the results of the Cleveland investigation, already referred to. Of 800 pupils in the Cleveland high school twenty-five per cent of the girls and eighteen per cent of the boys withdrew in one year for various reasons. Seventy-five per cent of the girls who left did so wholly or in part on account of bad health and nearly fifty per cent of the boys were in bad health while at school and thirty-three per cent of those who withdrew were compelled to do so by reason of physical disability.

Winsor (30) says that out of a class of seventeen pupils at Waltham high school in Massachusetts nine were removed in their graduating year on account of ill health.

Conclusions.

From the foregoing it is clear that wherever investigations into the health of school children have been undertaken the following facts have been ascertained, namely:

1. That there is a large amount of ill health among school children.

2. That this ill health is due to a variety of diseases and disturbances of function,

3. That the same diseases and disturbances exist everywhere and are constantly present,

4. That they are aggravated by the conditions of school life,

5. That they are increased in direct proportion to the number of hours devoted to study,

6. That they often lead to a premature withdrawal from school, and are manifest in a large proportion to those who remain to the end.*

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BIBLIOGRAPHY.

(1) Rep. of the Comm. of Education, 1892-93, Wash., 1895, i, 23.

(2) **HARTWELL (E. M.)**
The death rates among children in the public schools. *The Independent*, N. Y., xlvi, No. 2383, Aug. 2, 1894, 10 (986).

(3) **MOSSO (A.)**
Die Ermüding. Leipz., 1892.

(4) **HERTEL (A.)**
Neue Untersuchungen über den Allgemeinen Gesundheits-Zustand der Schüler und Schülerinnen. Zeitschr. f. Schulgesundheitspflege. Hamb. u. Leipz., 1888, i, 167: 201.

(5) **HERTEL (A.)**
Beitrag zur Beleuchtung des Krankheits verhaltens im Kindesalter. Zeitschr. f. Schulgesundheitspfl. Hamb. u. Leipz., 1894, 546.

(6) **BURGERSTEIN (L.)**
Axel Key's Schulhygienische Untersuchungen. Hamb. u. Leipz., 1889.

(7) **STROHMBERG (C.)**
Axel Key's Schulhygienische Untersuchungen, in Deutscher Bearbeitung, herausgegeben von Dr. Leo Burgerstein in Wien. Zeitschr. f. Schulgesundheitspfl. Hamb. u. Leipz., 1890, iii, 148.

(8) **CRICHTON-BROWNE (J.)**
Copy of report of Dr. Crichton-Browne to the Education Department upon the alleged overpressure of work in public elementary schools. London, 1884.

(9) **WARNER (F.)**
Study of the nerve system of children. Arch. Pediat., Phila., 1885, ii, 200-209.

(10) A method of examining children in schools as to their development and brain condition. Brit. M. J., Lond., 1888, ii, 659.

(11) On the study of conditions of development and brain power in children. J. Ment. Sc., Lond., 1889, xxxv, 357-359.

(12) Infancy, childhood and school life; the scientific observation and study of children in schools, and the classes into which they may be grouped. Med. Press. and Circ., Lond., 1891, N. S., lii, 277-279.

(13) The physical condition of children seen in schools and the local distribution of conditions of defective development. Tr. vii. Internat. Cong. Hyg. & Demog., 1891, Lond., 1892, x, 315-323.

(14) **WARNER (F.)**
The scientific observation and study of children in schools, and the classes into which they may be grouped. Tr. vii. Internat. Cong. Hyg. & Demog., 1891, London, 1892, iv, 10-15.

(15) On the physical condition of children. Tr. San. Inst., 1892, Lond., 1893, xiii, 131-136.

(16) **WARNER (F.)** *et al.*
Physical and mental deviations from the normal among children in public, elementary and other schools. Rep. Brit. Ass. Adv. Sc., Lond., 1894, 434-438.

(17) **THE PEDAGOGICAL SEMINARY,**
Worcester, Mass.

(18) **NESTEROFF (W.)**
Die Moderne Schule und die Gesundheit. Zeitschr. f. Schulgesundheitspfl. Hamb. u. Leipz., 1890, iii, 313.

(19) Handbuch der Neurasthenie. Bearbeitet von Dr. R. v. Hösslin, G. Hünerfauth, [*et al.*] Herausgegeben von Dr. Franz Carl Müller. 8vo, Leipz., 1893.

(20) **HAKONSON-HANSEN (M. K.)**
Weiteres über hygienische Untersuchungen in einer Anzahl höherer Schulen Norwegens. Zeitschr. f. Schulgesundheitspfl. Hamb. u. Leipz., 1893, vi, 396-403.

(21) **HAKONSON-HANSEN (M. K.)**
Schulhygienische Untersuchungen in Norwegen. Zeitsch. f. Schulgesundheitspfl., 1894, vii, 210. Hamb. u. Leipz.

(22) **SMITH (D. B.)**
Defective Eye-sight in School Children—its causes and remedy. Rep. Bd. Health, Ohio, 1886, Columbus, 1887, 236-242.

(23) **CARTER (B.)**
Eye-sight in School Children in London. London Letter, Med. Rec., N. Y., 1896, l, 251.

(24) **CALHOUN (A. W.)**
Circular of Information No. 6, 1881. Washington, 1881. Effects of Student Life upon the Eye-sight.

(25) **HAMILTON (A. McL.)**
The Prevalence of Nervous Disease among School Children, etc. Am. Psych. J., N. Y., 1876, N. S. iii, 112-119.

(26) **LINCOLN (D. F.)**
School Hygiene. Cyclopædia of the Diseases of Children, etc. John M. Keating, Phila., 1891, iv, 343.

27) **FAIRFIELD (M. W.)**
High Pressure *vs.* Hygiene in our Public Schools. Rep. Bd. Health, Mich., 1882, Lansing, 1883, 198-203.

(28) **CHANCELLOR (C. W.)**
The Sanitary Conditions and Necessities of School Life. Bienn. Rep. Bd. Health, Maryland, 1886-7, Annapolis, 1888, 478-510.

(29) **PERRY (W. S.)**
The Hygiene of Study. Rep. Bd. Health, Mich., 1882, Lansing, 1883, 100-108.

(30) **WINSOR (F.)**
School Hygiene. Rep. Bd. Health, Mass., 1874, Boston, 1874, 391-448.

(31) **SEGGEL.**
Bericht über die Augen Untersuchungen.
In: Bericht d. v. ärztl. Bezirksv. München Z. Prufung d. Einfl. d. Steil u. Schräg Schrift (Schief Schrift) Gewähl. Commission.
Münch. Med. Wehuschr., 1893, xl, 246.
[Also]: Zeitschr f. Schulgesundheitspfl. Hamb. u. Leipz., 1894, vii, 284.

The following references bear directly upon this paper, but have not been included in the text:

BURGERSTEIN (L.)
The Working Curve of an Hour: an Experiment Concerning Over-pressure of Brain. Trans. VII. Internat. Cong. Hyg. and Demog., Lond., 1891, iv, 87.

COWLES (E.)
Neurasthenia and its Mental Symptoms. The Shattuck Lecture, 1891. 8vo, Boston, 1891.

COWLES (E.)
The Mechanism of Insanity. Am. J. Insan., Utica, N. Y., 1891-2, xlviii, 49: 209.

HODGE (C. F.)
A Microscopical Study of Changes Due to Functional Activity in Nerve Cells. J. of Morphol., 1892, vii, 95.

KENNEDY (HELEN P.)
Effects of High School Work upon Girls during Adolescence. Ped. Seminary, Worcester, 1896, iii, 469.

LASER (H.)
Ueber geistige Ermüding beim Schulunterrichte. Zeitschr. f. Schulgesundheitspfl. Hamb. u. Leipz., 1894, vii, 2.

MAGGIORA (A.)
Les lois de la fatigue étudiees claus les muscles de l'homme. [Rev.], in: Am. J. Psychol., Worcester, 1891, iii, 377-378.

PORTER (W. J.)
The Physical Basis of Precocity and Dullness. Tr. Acad. Sc., St. Louis, 1893, vi, 161-181, 2 pl.

TAYLOR (H. L.)
American Childhood from a Medical Standpoint. 12vo, N. Y., 1892.

THE

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CHAS. H. STOWELL, M. D. EDITOR.

THE EDITOR'S TABLE.

Introduction. We take great pleasure in introducing to the readers and advertisers of the NATIONAL MEDICAL REVIEW, Drs. Thos. E. McArdle and Geo. W. Johnston. Washington has always been the home of these new editors of this journal, and there is probably not a physician in the city who does not know them. To our friends out of town we will say that the former holds a full professorship in the Medical Department of Columbian University, and the latter has a well-known private sanitarium.

Dr. McArdle has had considerable experience in editorial work and Dr. Johnston has done a great deal of work in a literary way.

Will our exchanges, and all who address the journal in any way, please send their communications to THE NATIONAL MEDICAL REVIEW, 1437 L Street, this city.

Good Things to Come. We chance to know that the new editors are preparing many rich treats for their readers. The next number of this journal will contain a series of articles of great practical value touching upon typhoid fever in the District of Columbia. There will be no less than eight contributors to this one number.

One Word More. This is our opportunity to say the last word, and we hasten to take advantage of it. Since the last issue of this journal we have accepted a position with a New England firm and propose to confine ourselves hereafter exclusively to the use of the pen.

We not only bid our journal farewell, but we also take final leave of the handsomest city on the globe.

The medical profession of this city has been most generous in its treatment of both the editor and his journal. To all our professional friends we bid an affectionate good-bye, with hearty thanks for thousands of favors.

We are so fond of editorial work that we have learned to love every medical editor in the United States. For all the kind words said about us in the past we are most grateful. May each editor have the best contributors, the best advertisers, and the largest subscription list.

For the generous support of our subscribers we have only word of thankfulness and gratitude.

We know our advertisers have received full returns for all they have given us, for they have been with "The only Medical Journal in the District of Columbia

The Beginning and the End. These are the days of the beginning. From sea to sea and pole to pole our colleges are crowded with most expectant youths. Peary is confident that he can place his left foot on the very center of the pole. He tells us he is willing to risk his life in the attempt. No less confident, and with no less enthusiasm, thousands of young men have rushed to the doors of our medical schools confident of the most brilliant success. How mighty are the professors! How brilliant are the jokes! How wonderful it is to add a reagent to the clear looking mixture and watch the falling of the precipitate? Surely the old doctors had no such advantages as these. Even if there are four years of the hardest kind of toil ahead yet the diploma time is coming. After that, the sun will shine at high meridian for twenty-four hours in the day. Believing that Rachael could be obtained, the years of service were but as fleeting moments. Knowing that the most brillant professional success is sure to come what are the four years of student life? * * *

These are the days of the end. The beautifully framed diploma stares the young doctor in the face. What does it mean? A fair amount of business, but no pay. Everybody wishes him well and knows he will succeed, but his board bill is unpaid. At last he seeks employment from some manufacturing chemist and his professional attainments are turned to the selling of pills and pill boxes. Alas! alas! When will the young men of our country awaken to the fact that to be a successful farmer is better than to be a starving doctor, a thrifty merchant better than a disappointed physician, and a happy, contented and busy mind better than one made restless because of the horrid face of the wolf just peering in through the bed room window?

Number of Doctors to Inhabitants. Just in this line, it is well to notice a table prepared by a physician in Austin, Texas, showing the death rate in each state and territory, and the relative proportion of doctors to inhabitants. There are nine states in which there is but one physician to over 900 inhabitants. There are seven in which the proportion is one doctor to less than 500 inhabitants. And of these seven the District of Columbia "leads all the rest" by a handsome showing. Here the proportion is one to 263, while the next in line is California with one to 383. One to 268! And yet the problem with our local colleges is, Where can we procure the means to enlarge our buildings? Dear boys and girls. You of the 25,000 medical students now filling our colleges, be good and go home. Help your father on the farm or in the store, and your mother in the house, and your chances of happiness and success will be increased a thousand fold. There is sufficient supply of "raw material" on hand to last the market for at least ten years.

Meat Extracts Not Foods. We wish that every physician was in full accord with the teachings of this article by Dr. J. H. Kellogg, of Battle Creek. Probably the majority are, yet we know of typhoid fever patients who have had little else than beef tea through all their illness. To be sure they survived, but that was all. The editor of *Modern Medicine* says:

Professor Von Voit, of Munich, Germany, has recently announced the result of recent researches concerning the nutritive value of meat extracts. The professor asserts that these extracts consist chiefly of excrementitious alkaloids, such as creatin and creatinin, which have been proved to have no nutritive value whatever. They very closely resemble, in

composition, thein and caffein, the poisons present in the tannin of tea and coffee, and produce similar effects.

We are not all surprised at this discovery. The surprising thing is that any one should ever have supposed it to be possible to concencrate the nutritive properties of thirty or forty pounds of beef into one pound of beef extract, as claimed by the manufacturers of Leibig's Extract of Beef and similar preparations. Beef tea is simply a solution of the excrementitious elements of the meat.

The only portion of the flesh of an animal which is possessed of real nutritive value is that part which has been alive and active before death. These living structures are not soluble; if they were, an animal which happened to fall into the water would dissolve like a lump of sugar. During life there is a small portion of nutritive material in solution in circulation in the body. After death, this small amount of soluble food material is rapidly converted into excrementitious matter; and as the skin, kidneys, and lungs cease their action, these poisonous substances rapidly accumulate within the body, the molecular, or cell-life of the body continuing some hours after death.

It thus appears that beef tea, as a French physician recently remarked, is "a veritable solution of poisons." The only portion of the flesh which has any nutritive value is that which is thrown away in making the beef tea or extract. The popular faith in beef tea as a concentrated nourishment has, however, become so thoroughly fixed and rooted that some time will be required to rid the world of this erroneous idea; but it is highly important that information upon the subject should be disseminated as rapidly and as widely as possible, for there is no doubt that many lives are annually sacrificed by faith in the superior nutrient value of meat juices.

Georgia Journal of Medicine and Surgery. The country again breathes more freely. There is another of its wants supplied. As the thirsty soul leaps for joy at the sight of a water brook, so the nation rejoices when another medical journal is started. There are about fifty collaborators, and if each one will only write an article every two years, there will be no dearth of strictly "original" matter. Go ahead, beloved. We are glad you think there is a vacuum and that you are going to cram it jammed full.

American Journal of Dermatology and Genito-urinary Diseases. Here again is a new baby. Two in a single month! Desiring to aid all such enterprises, we do now hereby agree to transfer to said journal a few names on our subscription list, good names, too; for we have known some excellent people of the same family. We are getting old, and we desire to have the same generous spirit that always impels the old doctor of the place to aid the young physician just from college. He always sends him "all the spare cases when rushed with work." And the unsuspecting medico actually loves that old man from the start (and those first cases are owing him yet, too).

Report of Treatment of Secondary Anemias, with Cases.

These anemias accompany or follow other obnornal conditions, and play an important part in their course. If not relieved, they proiong the original attack, and when convalescence is finally established, leave the patient a shining mark for those infectious diseases which claim for their victims those whose resistive power is below the normal standard.

In most anemias the blood is dimin-

ished in volume, the corpuscles in number and the hemagobin sometimes falls to less than half the normal percentage As a result the oxygen-carrying power of the blood is impaired, tissue metamorphosis retarded and nutrition of the whole body suffers in proportion to the degree of the anemia. There is loss of appetite and constipation, and the work of living is but lazily done.

Treatment.—First. Regulate the bowels; for this podophyllum in small daily doses is effective.

Second. Cause patient to drink freely of good water, boiled preferred, taking a glassful hot three-quarters of an hour before each meal. This fills up the circulation and facilitates excretion of waste material.

Third. Give appropriate treatment for the original disease, and

Fourth. We need a remedy or combination of them that will increase the oxygen-carrying power of the blood, increase the appetite and stimulate the stomach and intestines to renewed activity. Many so-called blood-makers attempt to do too much for us by supplying predigested and artificial food. It is better to give nature a chance, by coaxing her to resume her work, and then furnishing a nutritious and easily digestible diet.

Gray's Glycerine Tonic Compound is a preparation meeting the fourth requirement, and has done me excellent service in many cases besides those here reported. It is made by the formula of Dr. John P. Gray, a combination of sherry wine, phosphoric acid, gentian, taraxacum, glycerine and aromatics.

The following cases from my notebook will best illustrate my points:

Case I. Mary P.——, aged 24, seen first June 11, 1897.

History.—Had several attacks of malaria during fall of 1896, intermittent and remittent types; suffered two severe attacks of bronchitis during February and March, and had malaria again in May. Had been sick now six days.

Examination shows a profound anemia, rapid and very small pulse, temperature varying for 99.6 per cent to 103 per cent, as shown by later observations. Diagnosis, remittent malerial fever and anemia.

Treatment began with calomel, followed by quinine in doses of 5 grains every hour for four hours each morning, and small doses of podophylin at night, plenty of boiled water, and a liquid diet rich in nitrogenous elements. Fever continued one week, but being convinced that anemia was partially responsible for it, on third day ordered Gray's Glycerine Tonic Compound in half-ounce doses every four hours before taking food. This was continued four days with quinine as above, when temperature was normal. Now put on full diet, tonic continued before meals and quinine gr. ii. after meals. Treatment continued ten days, when patient reported a gain of four pounds, great increase in strength and growing appetite; pulse strong, appearance much improved. Tonic continued ten days longer, when a fine color, and strong pulse evinced perfect health.

Case II. Margaret G——, aged 36, widow, first seen May 17, 1897. Took cold in March, had a constant cough, lost appetite and flesh, constipation and has sweats and fever. Has taken several preparations of cod-liver oil, iron, hypophosphites and various cough mixtures without material relief.

Examination.—Roughened bronchial respiratory murmur, small moist rales over left apex, some dryness and fine whistling rales over right; no dullness elicited; anemic murmur at base of heart; pulse soft, 100; expectoration scant and glairy.

Treatment—For bowels, same as Case I, boiled water to be drunk freely, and a mixture containing codeine one-sixth grain, and beechwood creosote m. i. in ʒi of strong syrup of ginger, to be taken every four hours to relieve cough. Gray's Glycerine Tonic Compound was begun at once, taken after meals on account of irritable stomach.

May 27.—Cough slight, no expectoration or sweats, sleeps and eats well; auscultation-respiratory sounds much improved, a few most rales over left apex. Codeine mixture given twice a day. Tonic is continued.

June 7.—All symptoms have disappeared; examination negative; pulse strong, condition excellent, although she is supporting herself and children by hard work.

Case III. Annie V——, aged 23, married, first seen June 23. Aborted at the third month, two weeks ago. Had profuse hemorrhage then, and it has continued in varying quantity to date; is thin and pale, has fever, sweats, severe backache and pelvic pain.

Examination showed enlarged, tender uterus, with sanguino-purulent discharge, pulse 120, small and soft, mucous membranes very pale. Diagnosis, sepsis and anemia, following abortion and hemorrhage.

Treatment.—Thorough curreting with gauze drainage, changed every second day after irrigation with normal salt solution. The glycerine tonic and quinine were given as in later part of Case I. In one week the temperature was normal, no tenderness or pelvic pain, general condition much improved, tonic continued before meals and elixir lactopeptine after meals to aid digestion. On fifteenth day patient said she was almost as good as new; appetite splendid, digestion and assimulation perfect. Patient discharged cured July 13, having gained nine pounds in twenty days.

Case IV. Mary M——, 42, widow, first seen June 5, 1897. Was operated on for fibroma uteri one year ago, ovariotomy and partial hysterectomy being done. Since then has suffered constantly with stubborn constipation, anorexia and indigestion. Of late has had constant headache, cannot retain food, bowels not moved for six days, has distension of abdomen coming on every afternoon, accompanied by intense pelvic pain.

Examination showed marked anemia, tympanites, bowels loaded and a fibroid reaching half-way to the navel and nearly filling hollow of sacrum.

Treatment.—Enemata to clear out bowel; copious drinking of hot water; liquid diet; hot stoups for pain. Improvement is rapid. On the third day retained food. Gray's Glycerine Tonic Compound in tablespoonsful doses, well diluted, was given before meals and quinine gr. 2 afterward; food gradually increased. On the fifth day bowels moved naturally, distension ceased and appetite improving. One week later was much better; good appetite, bowels moving daily; is now doing her own work. She drank hot water before meals and continued the tonic for two weeks longer, when she reported that she was in better health than for years, and had gained eight pounds since beginning treatment.

These are some of the cases in which I have used this new restorative with the best satisfaction. I am well satisfied that we have in this tonic a most valuable medium, one sure to grow in favor as its merits become better known.—*J. A. Stoutenburgh, M. D., in Practical Medicine.*

Mother and Babe—Premonitory Signs of Disease.

When the baby sleeps well, wakes up bright, nurses or eats with a relish, is ready to be amused and amuses itsel

with the simplest trifle; when it presents a rosy appearance, increases in size, gains steadily in weight, and all the various functions are being performed naturally, then is the mother happy for she knows that her infant is healthy. But a change comes over the babe. It moans in its sleep; its appetite is impaired, it is fretful and doesn't care to be amused, and the fond mother is anxious for its welfare. Are these signs of illness unimportant, the index of some simple, fleeting malady, or do they forbode the onset of some serious disease? This is the question which in many cases presents itself to the mother. It is not the purpose of this article to give instruction in diagnosis, but rather to aid the mother in forming an intelligent estimate of the child's condition in the first stage of a disease so that, when necessary, medical advice may be summoned at the earliest moment.

Loss of appetite is one of the first and most common symptoms of disease. It is, indeed, almost always present whenever the health of the child is disturbed. And yet, alone, it is not an important symptom; it may indicate some trifling disturbance of the digestive organs or it may be due to the presence of a very serious ailment. It is well that we do not have to depend wholly on this symptom in the diagnosis of diseases, for when it is present in acute maladies it is always accompanied by other more distinctive signs. When the appetite is impaired but not entirely lost, when the child picks and minces its food, eating little, the advice of the family physician should be sought, for this condition indicates the presence of constitutional trouble requiring medical treatment.

Fretfulness is another very common symptom of disease, but it does not point to any particular ailment and should not be regarded with undue anxiety. When it is accompanied by an indisposition to play, and especially when the child takes no interest in what is going on in the room, the indications are much more grave.

Much may be gained by observing the features, condition of the skin, posture and movements of the child. The eyes present a peculiar luster when the temperature is high; the pupils are widely dilated when the nervous system is profoundly disturbed; they are contracted in opium poisoning; the inner surfaces of the eyelids are red and inflamed in the first stage of measles, and a puffiness of the lower lids denotes some derangement of the kidneys. On the first indication of soreness of the eyes of a newborn babe the physician should be called. Expansion of the wings of the nose during inspiration indicates some trouble with the breathing apparatus, usually pneumonia. If the child sleeps with its mouth open there is in all probability some catarrhal condition of the nasal passages, preventing free ingress of air. Mouth-breathing, though not an indication of the approach of serious disease, furnishes sufficient cause for consulting the doctor. If the tongue is coated white or dotted with white, or if small painful ulcers are discovered on its edges or under surface there is some disturbance of the digestive function. A swelling without redness of the skin just below one or both ears is the sign of mumps, and irregular twitching of muscles of the face indicate chorea, both comparatively harmless disease. The presence of hard, though movable lumps under the lower jaw, due to enlargement of the cervical glands, denotes a constitutional condition that should have intelligent medical treatment. The face is usually flushed in the early stages of an acute disease, but soon becomes pale as exhaustion advances.

A child lies with its lower limbs flexed when it is suffering from colicky or other pains within the abdomen. A position on the side or back with the head bent forcibly backward is assumed by a child afflicted with meningitis.

An infant that cries, is fretful and frequently carries its hand to the side of the head or presses the ear against its mother's breast, is most likely suffering from earache. Movement of the head from side to side or boring it into the pillow indicates headache and possibly meningitis. Rubbing the nose is indicative of some irritation in the alimentary tract, from worms or unwholesome food. Violent spasmodic contractions of the limbs and muscles of the head and face in other words a general convulsion, should always be regarded with concern. It may be a sign of acute indigestion or it may herald the advance of scarlet fever or some other serious disease.

Pain and crying, the former evidenced by the latter in children too young to express their feelings in articulate language, usually go together in diseases of childhood. Crying that is accompanied by an expiratory moan indicates pain in the lungs or pleura due to pneumonia or pleurisy. If the crying is accompanied by restlessness, the child changing its position constantly and turning and twisting its body, the pain is in the abdomen and is most likely due to indigestion or incipient entero-colitis. More rarely it will be due to the obstruction of the bowel or approaching appendicitis. In pleurisy, on the other hand, the child lies quietly, any movement increasing the pain. Crying on urination may be due to spasm of the bladder. It also calls for inspection of the external organs to exclude inflammation or injuries to those parts. But crying does not always indicate disease: it may be due to thirst or hunger or discomfort in many ways. There is a peculiar, piercing cry in tubercular meningitis, but as it is not heard in the earlier stages of the disease it need not detain us here.

Cough is a symptom usually indicating some trouble with the organs of respiration; but it may depend on an irritation in the ear, or the liver, or stomach, or it may result from imitation. When persistent it calls for medical treatment. The cough in pertussis, or whooping-cough, occurs in paroxysms ending in a prolonged whoop, and is not likely to be misinterpreted by anyone who has once seen a well marked case. The "croupy" cough is also well known and is usually taken as an alarm to send for the doctor.

The character of the respiration is an important symptom in all suspected diseases of the breathing apparatus. If a child of six to twelve months of age breathes more than thirty-five per minute while asleep, and at the same time appears ill in other ways, it is best to send at once for the family physician. It is well to remember that healthy infants of two or three months of age may sometimes breathe as rapidly as sixty or seventy times a minute when awake. By placing the ear against the chest of a child one should hear the normal "vesicular murmur." If any rough, piping sounds are heard or if no sound at all is heard the child should be placed under the care of the physician.

The character and frequency of the alvine discharges are unfailing sources of information regarding the condition of the alimentary tract. The evacuations in simple diarrhea remain somewhat consistent throughout the course of the attack, but they are, of course, quite thin, often green in color, usually offensive, and may contain whitish specks or lumps which represent the undigested casein of the milk taken as food. If the stools number more than four a day and

the child is otherwise unwell, the case should have the attention of the physician. In cholera infantum the evacuations are watery and very frequent with rapidly progressing exhaustion.—*J. Edmund Brown, M. D., in Trained Motherhood.*

Surgical Hints. It is better to have too many assistants than too few.

A paronychia or "run around" rarely demands incision. Daily wet dressings with firm gauze packings between the nail and skin will usually effect a cure. The first packing hurts, the others as a rule do not.

When you boil water to be used in an operation, you should at the same time boil a vessel with which to dip it out, and this vessel should never be set down in an undisinfected place, for it is necessary to have its outside as clean as its interior.

In an emergency operation, if you happen to be without operating gowns, remember that a newly-washed night shirt will serve quite well. It is far cleaner than one's external clothing, and will protect the patient against the accidental contact of instruments or ligatures with one's surgically unclean shirt or trousers.

A patient with anal fissure should be instructed to smear the orifice inside and out, as well as he can, with vasoline before each movement of the bowels. This will in great measure prevent fæces from clinging to the parts in passing, and will also greatly facilitate the passage of the stool. Do not advise such a patient to use glycerine locally.

If you happen upon a recent compound fracture where the end of the bone still protrudes through the opening which it has made in the skin, take every precaution that this end may not slip back until it has been thoroughly disinfected. In many instances it is safer to scrub and clean the surrounding parts, and then after forcing the fragment a little farther through, to cut it off. When this has been done the fracture may be reduced with a fair prospect of aseptic healing.

Fissure of the anus usuallv gives rise to intense pain which often lasts many hours after stool. This may be greatly alleviated by inserting a very narrow slip of moist gauze with a flat probe, so that the gauze lies against the raw surface of the fissure. It gives the some relief which is experienced when a light packing is placed between the skin and the nail, in cases of so-called ingrowing toenail, and for the same reasons, namely, it prevents inflamed tissues from touching each other and drains away irritating wound secretion. Weakly iodoformized gauze is best because of the local anæsthetic action of the drug, but be sure that no idiosyncrasy exists forbidding its use.—*International Journal of Surgery.*

Some Recent Work in Abdominal Surgery. Dr. I. S. Stone of this city, sends us an account of his last one hundred cases of abdominal surgery. They represent about a year's work in public hospitals and in his private sanitarium. Dr. Stone has had but three deaths in his last one hundred and fifty cases.

The Medical Gazette Publishing Co., of Cleveland, Ohio, announces a small volume soon to be issued with the title "About Children." The author is Dr. Samuel W. Kelley of the Cleveland College of Physicians and Surgeons. The book will contain six lectures filled with information for nurses, medical practitioners, students and all who have the care of children. Advance orders will be filled in September.

The Medical Society of the District of Columbia is responsible only for the "Transactions" published in this journal. It is entirely free from any connection with the Editorial and Business management.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M.D.

MEETING OF MAY 12, 1897. Dr. J. H. Bryan, Vice-President, in the Chair.

INFLUENCE OF SCHOOL LIFE UPON THE HEALTH OF CHILDREN.

DISCUSSION.

Dr. Busey, in opening the discussion, limited his remarks to the affirmative proposition, that premature school life is detrimental to the health and development of children, in that it may be the exciting cause of the following school diseases: Anorexia, anæmia, chlorosis, epistaxis, headache, irritability of temper, mental dullness, sleeplessness, stammering, nervousness, lateral curvature of the spine, muscular twitchings, chorea, chronic digestive disturbances. In support of the above proposition he contended that prematurity limits the initial age of school life to the eighth year, as shown by clinical observations, statistical investigation and developmental processes. The original capacity of the occipital, parietal and frontal parts of the cranium differ. The development of the different parts is not uniform, only reaching normal proportions of development about the tenth year. Prematurity in the period of highest formative activity of the brain, and slowest evolution of mentality, and at a period consequently most susceptible to strain as necessarily followed by harm to the nervous system. At this age there is the greatest vulnerability and susceptibility to disease, the highest mortality and least immunity from disease. It is the age of easiest adaptation to physical habits when defects and deviations are produced. Retardation of the growth of the length of body begins with the seventh year, and the normal proportion of growth between the trunk and lower parts are not attained before the eighth year. The stationary proportion in the relation of the height of cranium to the face is attained about the eighth year.

Premature school life promotes and precipitates the development of hereditary predispositions, it increases morbidity and mortality of school and developmental diseases. Precocious mind evolution is the precursor of adolescent arrest of mentality.

Premature school life also exposes children to infection and contagion during the period of life where there is the highest susceptibility and least *vis resistentia*.

The secret of a thorough education lies in the uniform development of all the powers, but there is no law applicative to every child, and general laws must be modified to suit individual conditions.

From his observation of the kindergarten system in this city Dr. Busey had come to the conclusion that it was simply an economical expediment to provide for the nursing of small children away from the care and observation of parents.

"SOME OF THE CAUSES OF SO-CALLED SCHOOL DISEASES FOUND IN THE HOME".

Dr. S. S. Adams said: I have selected as the topic of my remarks to-night some of the causes of so-called school diseases found in the home, because, while I am willing to concede that many such school diseases are due to school-life, nevertheless daily experience demonstrates the fact that many of these diseases should not be classed, even indirectly, as due to school-life. For this reason it is desirable to discuss, for a few moments, some of the causes of disease found in the home. One of the causes is to be found in the ambition of parents to have all the children in their family reach perfection. This ambition of the parents may be curbed by reminding them that the physique of one child is not the same as that of the others, and that each member of the family must be treated from different standpoints. In other words we cannot take the different members of the same family, with their different physical and mental conditions, and treat them in identically the same manner. These apparent causes of failure in children to reach perfection in school may be attributed to many causes. In the first place is to be considered the unfavorable circumstances under which their studies are pursued. The light in most houses, even of well-to-do people, is very bad. Study under such circumstances is injurious to the eye, and consequently is injurious to the rest of the organism. Again, the position assumed in study is unfavorable. Again, we have improper hours of study. Some children go to bed at 10 or 11 o'clock, sitting up until that hour to study, and then getting up again at six o'clock in the morning.

Another cause of school diseases found in the home is that of improper diet. And by this I do not mean the scanty diet of the poor, but that common among the children of the well-to-do. What is more unwholesome than for children to go on two scanty meals in the early part of the day and a bountiful one later in the day.

Lack of exercise is another factor in the development of school diseases for which the cause must be sought in the home. By this I mean lack of systematic exercise. In connection with improper food is to be considered the indigestible products of the penny bakeries in which school children indulge to such an extent. Parents are wanting in their duties when they do not insist upon their children taking sufficient lunch with them to school to sustain them during the day.

There should be reciprocal arrangements between a healthy brain and a healthy body. A child should not study immediately after meals. A certain portion of the time of the day should be set apart by the parents for rest and recreation, and rigidly enforced, if they wish to secure a healthy body, and with it a healthy mind, in their children.

There is that feeling of not-to-be-outdone, and that wounded pride occasioned in many children by standing lower in class than another child, and a tendency to omit exercise and rest in order to succeed. This spirit of emulation occurs at a critical period of life, usually between twelve and sixteen years of age, when the children should be carefully guarded, when physiological changes of the utmost importance to the stability of the constitution are taking place, and when it is important that the physique of the children should be watched. Some of the diseases produced in this way are dyspepsia, constipation, debility of the muscular system, anæmia (which is frequently seen), chlorosis, depression of spirits amounting to

a mild form of melancholia, impairment of the memory, confusion of judgment, inability to think. The last three of these symptoms are found in the beginning of more serious forms of mental disease in the adult. These conditions are not hypothetical, but go to form that disease known as neurasthenia, or nerve impoverishment. I am inclined to believe that the schools aid considerably in the spread of contagious diseases. This is due largely to an unwillingness on the part of parents to admit that there is a contagious disease in their family because the other children will have to be kept from school.

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"MANY OF THE CAUSES OF SO-CALLED SCHOOL DISEASES FOUND IN THE SCHOOL."

Dr. George M. Kober said: Before taking up the question as to how much the school, *per se*, is a factor in the causation of school diseases, I venture the prediction that statistics based upon an examination of American children will show better results than those of Dr. Johnston, because of the better sanitary arrangement and construction of American schools. Nevertheless a sufficiently large percentage of children will be found suffering from abnormalities and diseases which, because rarely seen before the age of seven, may be justly considered as incident to school life. This is not surprising when we consider that children upon beginning school, enter upon a new life and environment. Up to this time they have been allowed to run and play in the open air, exercise the body and senses without restraint, but now, without a period of transition, they are obliged to remain for hours in close and often over-crowded school rooms, taxing their minds and straining their eyes for new objects. This cannot but be injurious to children at such a susceptible period of their lives. It is strange, therefore, that up to within the last thirty years there has been but little attention paid to the hygiene of schools. It is said of the ancient Greeks that their teachers walked about with the scholars in the open air, asking and answering questions. If so, their method of teaching had many advantages, because the air of the school room has much to do with nutritive disturbances of the child. In the first place there is a decided difference in the purity of the country and city air, especially in the amount of carbon dioxide, organic matter and germs, and this difference is still more marked between the open air and the air of habitations and school rooms. Every excess of either cannot fail to be without effect in the purification of the blood, and if continued the health must suffer. This is especially true in children who produce relatively a greater amount of carbon dioxide than adults. Impure air is a potent factor in the production of anæmia, chlorosis and nutritive disturbances, and paves the way for tuberculosis and nervous diseases. It is true some of the ill-health and disturbances attributed to school life are due to improper food at home, as Dr. Adams has pointed out. But it has been conclusively shown, that many of these disturbances apparently disappear during vacation, showing that the school has more to do with it than the home life.

I shall take up two of the commonest of the school diseases: headache and epistaxis. Out of the 3,504 pupils examined by Becker, 974 were suffering from headache and 405 from epistaxis. The higher classes furnished the largest percentage, being twenty-eight per cent as compared with five per cent in the lower classes. The simultaneous occurrence of these two diseases in such a large number of cases points to a common cause, viz: congestion of the men-

inges and nasal mucous membranes. Every prolonged mental effort leads to hyperæmia of the brain, resulting in headache, while epistaxis under such circumstances is easily provoked by inhalations of dust, hot air, etc. In some cases headache is due to bad light causing occular fatigue, tight collars, superficial breathing, inhalation of vitiated air and heated rooms. According to Dr. Johnston's statistics headache was more common in the morning than in the evening. This is something that would hardly be looked for, and suggests the possibility of children feigning illness. At all events when I was a small boy, I frequently plead headache at the time of my arithmetic lesson, and the pain usually disappeared after that hour. Nervous affections, especially neurasthenia, are also quite common, especially during the period of puberty, and overtaxing the mind is an important factor. As already stated every mental effort means a temporary hyperæmia of the brain, and if we do not allow the brain to rest, this temporary hyperæmia may become constant and give rise to nutritive disturbances of the working part of the brain and serious nervous disorders. The studies should be regulated according to the physical and mental capacity of the pupils. Especial precautions are necessary for the protection of scholars who are anxious for class honors, and those who worry over their lessons and in consequence suffer from loss of sleep, appetite and impaired nutrition; hence after every prolonged mental effort sufficient time must be given for the restoration of the intra-cranial circulation.

Finally, it should be remembered that the whole tendency of modern civilization, is towards the development of nervous temperaments, a predisposition to which is often inherited and developed by premature school life and by the premature use of tobacco; tea, coffee, etc.

Mental disorders are rare in school children. Out of 723 inmates of an asylum presided over by Erlenmeyer there were only five males and two females admitted from the high schools. German asylum authorities deny that the modern system of education is a factor in the causation of mental diseases. I believe, however, that where there is a predisposition to insanity we should be very careful to avoid premature education and every attempt to overburden the mind.

As to myopia and lateral curvature of the spine, we are aware that even in children with a predisposition to these diseases they hardly ever develop before the seventh year. Myopia is rare in the village and the lower grades of city schools, but increases in intensity and frequency in the higher grades. This leads to the conclusion that school life is a factor in the development of myopia. As the contents of the eye are liquid and the muscles of attachment governing the accommodation of the eye are constantly set on near work, necessitated by small type, poor ink, faulty press-work, etc., with, perhaps, defective illumination, it is not surprising that eye strain and elongation of the sagital axis of the eyeball results. Apart from this we know that hyperæmia of the bulb of the eye leads to myopia, and we are likely to have congestion from over work and passive congestion from bending the head over the work. In some cases this is due to a bad position of the pupil, but in other cases it is the result of faulty seats and desks, and since these faults have been corrected the percentage of cases of myopia in some of the German schools has been reduced from twenty-one to fifteen per cent. This shows that while we may have faulty print, bad positions and over work at home as a cause

of myopia, the school itself is a still more important factor.

Lateral curvature of the spine is rare before the sixth year. It is most common in girls, 261 out of 300 cases being girls, while only thirty-nine cases occurred in boys. It has also been remarked that the majority of cases of lateral curvature are on the right side. This is probably due to the fact that most persons use the muscles of the right upper extremity more than those of the left, and in writing are very apt to lean the head to the left side. This deformity is never developed in persons who are obliged to maintain the erect position and bring into simultaneous use the muscles of both sides. But the disease readily manifests itself in children of weak muscular development, especially when they assume a careless or twisted position. The evil effects of bad school furniture, or of faulty position at home is seen in this diagram (exhibiting diagram). This faulty position, leading to lateral curvature or scoliosis, is assumed when the seat is too low or the desk too high. The reason why girls are more affected than boys, apart from a weaker muscular development lies in the fact that their skirts are apt to be swept back in the form of a pad upon which they sit generally with one buttock, and the greater elevation of one buttock throws the spinal column out of the vertical line, which is compensated by a partial twisting of the trunk. This deformity is entirely preventable, by proper seats and position. However, there are some scholars who, even if they have proper seats will assume faulty positions, especially in writing. These cases should be left to the teachers to deal with. All of the causes spoken of may of course operate at home, but I hope that sufficient evidence has been presented to show that the school is largely instrumental in the development of these disorders.

"The Sanitary Condition and Needs of Washington Schools."

Dr. Wm. C. Woodward said: Probably but few of the persons present realize the magnitude of the public school system of this District. There were enrolled during the past school year 42,426 pupils, with an average daily attendance of 32,153. There were engaged in the instruction of these 1,031 teachers. The cost of maintenance was $1,082,610.80. The supervision of this number of pupils is no small task, and I think the District is to be congratulated on the satisfactory manner in which it is done.

I believe that with the modern Washington school building but little fault can be found. The present plan of such buildings dates back to 1882. Prior to that time the twelve-room school was commonly erected, but a committee then appointed to devise a suitable general plan for school buildings prepared the plan of the eight-room building now in use. The effect of reduction in size, of course, was to diminish the difficulty in heating and ventilating; and by diminishing the number of pupils congregated in one place to lesson the danger of the spread of infection. Such buildings are all lighted and constructed in conformity with the most recent ideas, the floor-space being ample, and the lighting all that could be desired. The lighting depends to some extent, in any case, upon the extent to which the teacher avails herself of the facilities at her disposal. If she fails to take note of the changes in the position of the sun and character of the weather, the best results cannot be obtained, no matter how carefully the building has been planned and erected. None of the old school buildings, in my judgment, are absolutely bad, or such as

must necessarily be condemned at once. Any solution of the question as to what action shall be taken in reference to these buildings is rendered difficult by the limited appropriations made for new buildings.

The policy of erecting eight-room buildings necessitates the erection of a larger number of them, and, with the fixed appropriation, the tendency is to make both ends meet by curtailing the size of the school yard. This is due to the high price of ground, but is an evil in two ways. It interferes, in the first place, with the proper lighting of the building, and, in the second, with the proper accommodation for the children during recess, turning them into the streets or into the play rooms in the basement. The school yards should be increased in size, and should be under the direct supervision of a teacher, who should supervise, in a general way, the sports, restraining those who are inclined to be too active, and encouraging those who are too slothful, to greater activity. Another advantage in the erection of small schools is that they can be scattered through the city so that pupils in attendance nearly always live nearby, and are able to go home for lunch at recess.

Air should be admitted to the school rooms in such a way as to avoid draughts. The so-called Smead system of ventilation now in use is a modification of the old Rutan system, and operates by creating an outward current of air in an exhaust flue by means of a fire maintained there. By the system, as at present constructed, air is delivered in the rooms about the middle of the inside walls, and leaves by exits under the windows. Passing to the basement it then escapes through the exhaust flue. It is difficult, by this system, to regulate the source of the air furnished and to control its relative humidity. Efforts have been made to overcome these defects by providing mechanical ventilation and steam heat, which is undoubtedly the ideal system of heating and ventilating, and while the appropriations have not permitted the use of steam for heat, mechanical ventilation is being introduced in the new buildings. The new Western High School, however, which is about to be constructed, will have as good a system of heating and mechanical ventilation as can, in the light of present knowledge, be devised.

As to the water supply of the schools, those in the city are supplied with Potomac water, while those in the country necessarily depend upon wells. Here the energy of the school trustees has been manifested by securing an appropriation of $2,000 for the purchase of filters. Recently the schools which have been erected have had water introduced, not only in the basement but on each floor, so as to encourage the more free use thereof.

In regard to the closet accommodations for the schools, we can hardly claim such a satisfactory state of affairs as in reference to other matters. A number of privy vaults are located in schools right in the heart of the city. The so-called Smead system of heating and ventilating includes a process for the disposal of human fecal matter and urine by evaporation. The material is allowed to accumulate in water-tight vaults through which a current of air is passing, so as to carry all volatile matter from the building through the exhaust flue. Whatever is not thus volatilized is burned *in situ*. When we realize that we have the fecal matter and urine of 10,000 pupils disposed of in this way, the subject is not a pleasant one to contemplate. For this condition of affairs we must blame a former building inspec-

tor, who has now, however, passed beyond criticism. Wedded to the Smead system, he thought it better than any system of plumbing. The Commissioners have been requested to replace all of these vaults with modern conveniences. The toilet accommodations of the schools are usually located in the basements. Such location, always open to criticism, is especially so where the Smead system of disposal is in use. The closets should be located preferably in a separate building, properly heated and ventilated, and separated from the play rooms. It might also be well to consider the plan of placing water closets on each floor, to be separated from the building proper by cross ventilation.

The cloak rooms are not provided with proper arrangements for the separate accommodation of the pupils cloaks and hats. Under such conditions there is some danger of infection. Clothes may be brought from infected houses and hung against those of children who are susceptible to such infection. A separate compartment, or locker, should be provided for each child.

We can probably prevent lateral curvature of the spine by having chairs and desks properly adjustable, and properly adjusted. The new schools have been provided with such furniture. Where they are not in use it is because they were not available in satisfactory form when the building was furnished.

The black boards are satisfactory; they are not too shiny, and are a good black. In some instances, however, they are located between the windows; but I am told that these are used only by the teachers for their memoranda. Their abandonment should probably be required.

The method of distribution of free text books is open to criticism. As far as possible a separate book should be provided for each child, and when the available appropriation is exhausted pupils should be requested to provide their own books. At present, a book is given to several pupils in the course of a week or a month, and in some cases different children use the same book on the same day. Whenever cases of contagious disease have appeared in a school, however, and there has been any reasonable suspicion that a book or books have been infected, the school authorities have always acted on the safe side, and such books have, if possible, been disinfected, but if not, they have been destroyed. The use of slates in the Washington schools is a thing of the past.

In dealing with large numbers of scholars it is difficult to properly correlate physical training with mental effort. As Dr. Busey has pointed out, all children have not the same mental or physical strength. It is impossible, therefore, to formulate any scheme of education which will apply perfectly to each individual pupil, in respect to either mental or physical training.

As to the prevention of the spread of infectious diseases among school children, several plans have been suggested. The one most popular at present is by means of medical inspectors, appointed to visit the schools every day, and examine such pupils as the teachers might point out, or such as he might notice to be apparently unwell. This plan has met with the approval of the superintendent of schools and of the school board of this District, but, in the absence of an appropriation, cannot be put into operation. The scope of such inspection might be extended with advantage to supervision of the sanitary condition of the school buildings and play grounds.

In order to get the best results in the sanitation of the schools, more attention must be paid to the instruction of nor-

mal school pupils in hygiene. This normal school course is already good, but with its extension from one to two years it should be possible to give the attention to this branch which its importance demands.

There are no final examinations in the public schools of this city, and there are no commencements in the sense of the term as used by Dr. Busey. No prizes are given except the scholarships in the high schools. Manual training counts for something as physical exercise.

In reference to the curriculum of the public schools, I am hardly in a position to speak. That subject is now being investigated by competent men to see whether it yields the best possible results from the outlay of time and energy. The amount of work which a pupil does of course depends partly upon himself and partly upon his teacher. Many of the teachers blame pupils for all overwork because they (the pupils) "do not know how to study", forgetting that it is the duty of the teacher to show their pupils how to do so. There is ground for just complaint, however, as to the excessive work required of the pupils in the high schcols. The difficulty is due, in my opinion, to the assignment of lessons by each teacher, independently of all others, so that excesses of work in one branch are not allowed for by diminishing the task assigned in some other. The length of lessons to be assigned in each branch should be determined at daily or weekly meetings of the teachers interested.

MEETING OF MAY 19, 1897.

Dr. S. C. Busey, President, in the Chair.

DISCUSSION CONTINUED.

"THE EFFECT OF SCHOOL LIFE ON MENSTRUATION."

Dr. Sophia A. Nordhoff-Jung said: Some of Dr. Johnston's charts have shown us that at the time of puberty there exists a certain difference between the curves of boys and girls. The lines which were the same during the early years of school life separate about the age of twelve to fifteen. This incongruity has a deep meaning no doubt. A thorough examination based upon statistics could alone explain this fact satisfactorily. But such statistics do not exist as yet.

I wish to call attention to two facts. The first, menstruation takes place about this time and chlorosis has been found in thirty per cent of school children by Stevenson of Aberdeen. Further he has shown that the curve of chlorosis reaches its maximum height between the ages of fourteen and twenty-one and he asserts that the chlorotic diathesis accelarates the age at which menstruation first appears.

It does not seem too bold to draw conclusions from these observations in trying to explain the increased morbidity curve of girls at the time of puberty.

In Germany the law compels parents to send their children to school from the sixth until the fourteenth year, the wealthier middle class and the upper classes continue school life for several years longer. According to German statistics the time of the first menstruation falls between the ages of fourteen to sixteen. It has further been shown that peasant girls mature later than girls brought up in cities. Since the former have practically ceased to be school children at the time of their first menstruation might this not be one of the reasons why chlorosis is almost unknown among them and hysteria and other forms of nervousness are rarely encountered in rural districts?

It is a remarkable fact that no researches have been made in any of the European countries, concerning the ef-

fect of school life upon the female pelvic organs. Not a single article dealing with this subject could be found in the Army Medical Library.

In this country Dr. Mary P. Jacobi is the only author who mentions the subject in her valuable and well known book, "The Question of Rest for Women during Menstruation". While it was not her purpose to investigate the influence of school life upon menstruation, yet during her researches she ascertained the following facts: Only fifty-nine per cent of women are free from pain or suffer slightly during their period, while forty-one per cent of women suffer greatly so that with them menstruation becomes a morbid process. Of 162 painful cases fifty-three per cent had been so from the beginning; in forty-six per cent the habit had been acquired. It is evident that wherever pain had existed from the age of thirteen to fourteen no occupation adopted, eight to ten years later could be held to be the cause of it.

The only occupation to be considered in this connection is that of study at school. The author made further thorough inquiries and found that, "The educational coincidences of menstrual pain are with more prolonged primary and seeondary education but seems to have no connection with higher classes."

It has further been demonstrated by statistics that the class who never suffered menstrual pain took a great deal of exercise alternating with school hours.

"School Life as related to the Developmental Period."

Dr. G. W. Fóster said: The paper of Dr. Johnston, based upon statistics of independent observers in different countries upon many thousand pupils is accepted as establishing the fact that school life is a cause of morbidity, and that this morbidity especially affects the nervous system.

It will be my object to show that this conclusion is in harmony with physiological conditions peculiar to the development-period of youth; and especially to brain development. Health and development depend upon a due balance of all functions Every organ, gland or tissue seems, through changes in the fluid media of the body, to influence the nutrition and function of every other. Each may be regarded as a community of cells, fixed or mobile, living their life, acting upon their environment, and being acted upon through the metabolism of growth, function and decay.

Such balance of functions as has proved adapted to the good of the individual or species, and has become fixed by the laws of evolution, we call "natural"; and the manner of life favoring the maintenance of this balance we call a natural way of living. Among the influences of modern social life at variance with natural healthy living, in many instances, at least, and in greater or less degree, is school life. Let us consider certain physiological peculiarities of childhood bearing upon this point.

The brain at birth is imperfectly developed and incapable of function throughout two-thirds of its mass (Flechsig). It develops rapidly in early childhood and at certain epochs, reaching complete development at about twenty-five years. In early childhood there are marked peculiarities in the blood and circulatory organs, including lymphatics, which are at this period very large and permeable. The blood is greater in amount (proportionate), but has less fibrine, salts, hæmoglobin, soluble albumen, more white corpuscles and less specific gravity. The conditions favor pathological anæmia from slight causes. (A. Jacobi).

The blood vessels in childhood are large, especially the subclavian and common carotid. The capillaries are also thinner and more permeable than in the adult. The heart is small, and blood-pressure low. Jacobi calls attention to the fact that the heart is smallest, with large arteries, at the period of most intense growth; growth and physiologically low blood-pressure thus going hand in hand.

Water prevails in all the organs; the brain contains a high percentage. From these peculiarities of brain-structure and circulation result increased reflex nervous irritability and tendency to congestions and inflammations, which are also more destructive. The functional capacity of the brain cells is not the same quantitatively or qualitatively as in adults, as will be more fully discussed later on.

Recurring to conditions of the circulation, of especial importance is the marked enlargement of the heart which takes place at the beginning of the seventh year, previous to which it is relatively small. This period corresponds to the beginning of robust muscular activity in childhood; it is the natural condition of all young, growing animals, and has an influence upon the development and balance of the adult organism which cannot well be over-estimated.

The artificial restraints of school life may injuriously limit the development of heart and blood-vessels at a similar cost to the brain and other organs as attends congenital smallness of circulatory organs (Bastian). Besides such important remote effects of the muscular activity of childhood are important immediate results, some measureable, others not. Among these, besides the growth of muscles, bones, etc., are to be mentioned the effect of contracting muscles upon venous and lymph circulations, and the physiological products of the metabolism of muscle, to which a part of the good effects of muscular activity may be ascribed. Such are some brief indications of the evil tendencies which may attend the artificial restraints of school life, whose influence, generally speaking, may be traced in impaired functions of every organ in the economy.

Another distinct and equally important factor in the morbidity due to school life is found in the imposition of work unsuited either in quality or amount to the stage of brain development of the pupil. The following propositions will be generally conceded: (a) inmature organs (and their elementary parts) are especially liable to functional strain; (b) repeated strain results in defective nutrition, impairment in growth, functional energy and stamina. Similar effects follow sexual, alcoholic and narcotic "excesses" in the young.

How is such strain liable to be felt by school children? It is liable to affect chiefly two classes, the precocious, and the neurotic. If these characteristics happen to be combined in the scholar the dangers are intensified. The quality of brain-work imposed may contribute as much as quantity to produce excess. The adaptations of the brain in childhood haye not yet been sufficiently studied.

Indications point to a subdivision of cortical function more minute and complex than was formerly conceived of. The cortex undergoes steady development during twenty-five years. The change is no less qualitative than quantitative. The adult brain is not the brain of childhood grown larger and stronger. It is not all there is in childhood. It does not require the physiologist to recognize this fact. The higher organs of the brain are only developed as their function is called for in the

"natural" course of living. This branch of the subject is too extensive for more than a suggestion. The first cortical developments have to do with special sense, movements and muscular and cutaneous sensibility. The chief cortical functions in childhood have to do with perceptions and their gradual perfection and movements, with their increasing precision and more elaborate co-ordination, by means of that cell-organism which constitutes memory, and the function of comparison which seems to be separately localized in the lower and higher planes.

The emotions and more abstract reasoning processes are of later development. These latter belong to childhood and early youth only in their simpler and rudimentary forms, and an early forcing process results in permanent weakness of these functions, in accordance with the general law. Most of the world's great men have been notably free from such early forcing processes. Activity is essential to development, but it should be along natural lines and involve in orderly progress the various cortical centers as they develop in organization. To such systematic development our school life is utterly foreign and antagonistic. Some conditions affecting the brain in childhood have been already referred to. Another important consideration is the demand made upon the brain by the developmental processes in the body generally, and especially of the brain itself.

Normal nutritive processes depend upon the integrity and activity of the nervous system. This implies efferent and afferent fibres (whether specialized for this sole purpose or not) and cell-centers whose nutritive energies are thus taxed.

These processes and demands are no less real because of outside consciousness. Brain work is especially enhanced by the processes attending its own development, as in the phenomenal changes of puberty. Within the nominal school-age there are four noteworthy periods of stress: (a) the period of rapid brain-growth between the fourth and seventh year; (b) the period of second dentition; (c) the period of heart-growth beginning at about the seventh year; and (d) the development at puberty from the fourteenth to the seventeenth years. The last is of prime importance, and is too little understood and regarded. Tendencies egoistic and altruistic are then settled, of great moment to character and continued sanity. The brain, at this time of all times, should be hygienically guarded.

What, in conclusion, do we definitely know of the effect of fatigue and overstrain upon nerve-cells, and its immediate and remote pathological results? In answer, the experiments of Hodge (A Microscopical Study of Changes due to Functional Activity in Nerve Cells, *Journal of Morphology*, 1892), may be stated in some detail, with corroboration by Drs. Batty Tuke, Mann and others. Distinct changes are demonstrated in cytoplasm, nucleus and nucleolus, as well as in the nuclei of the enclosing cell-capsule. These changes may be physiological and recoverable, or pass this limit and result in pathological degeneration, identical in form with those observed as the earliest changes in various forms of insanity (Andriezen, Berkeley, Batty Tuke), and in epilepsy (Collins). Both clinical and pathological grounds are cited for the belief that fatigue processes, sufficiently continued, may result immediately or remotely in nervous or mental disease, such as chorea, hysteria, epilepsy, migraine, neurasthenia, melanchalia and other forms of insanity. Of such unfortunate results school life must often be accounted a factor.

In the opinion of the writer the present system of school life and school studies requires the most earnest and careful investigation with a view to rearrangement in accordance with the teachings of physiology.

Dr. C. R. Dufour said: Some time last year I read a paper before this Society touching somewhat on the same subject as that of Dr. Johnston; but not dealing so much with the details of the subject as he has done. It is therefore with great satisfaction that I have listened to the discussion on this paper. In the same connection I would like to read an abstract from my paper, alluded to:

Children's eyes should be protected from the glare of light, from dust, irritating substances, atmospheric changes and from strain, should this be neglected an impairment of vision may result. When they arrive at the age of six years, the age at which they begin school, their eye work should be regulated by their physical development, it would be better to educate them by the Kindergarten system and by object teaching, until they are about nine or ten years of age, their eyes then would be in a better condition to stand the work put upon them in the future. On averaging the report of the public schools of several cities, I found that of the total attendance 69.63 per cent were in the primary grade, the ages in this grade ranged from six to ten years, 26.6 per cent were in the grammar grades, and only 4.31 per cent were in the high school. By these figures it was seen that a little over fifty per cent failed to enter the grammar grades. The average age at that time was ten years; at the termination of the grammar grades 71.68 per cent, more than three-fourths failed to enter the high school, the total loss between primary and high school was about ninety-six per cent. The cause of this loss in a large majority of cases is because the child cannot keep up in its studies. Many of them are not in full vigor of health, are weak and poorly nourished, have bad hygienic surroundings, and their whole aspect is one of lack of nutrition. These children also, as a rule, suffer from defective vision. Not only in this class are those who drop out of school or keep up in their studies with difficulty, but we find them among the healthy and well nourished; the reason of this is, that having some visual defect, they cannot do their work without such physical discomfort, and they finally yield and leave school.

The children at our public schools are kept too continuously at work, long lessons are assigned them and the general curriculum, especially of the grammar grades, is one liable to produce eye strain and mental fatigue. I think we should have some legislation compelling an examination of the eyes of all children at the time of their entrance into school, and as they reach the higher grades, supervision of their eyes should be maintained. Their studies should be regulated, and the hours for home study not too long; the effect of prolonged study is injurious both to the eyes and to the general health. It is no uncommon experience to be told by parents that their children's eyes and health begin to fail after their entrance into the grammar grades of our schools. Poor light is a factor in producing eye strain; attention therefore should be paid to the manner of allowing the light to enter the school room; it should enter from behind the scholars, and not be allowed to shine in their faces; the walls should be painted some neutral tint, thus doing away with the white walls, the glare of which is injurious to the eyes. When we remember that the contents of the eye is a liquid, and that six muscles are attached to it externally, we can see that

the strain of accomodation, with the effect of poor light and the dependent position of the head assumed in studying, will tend to produce myopia, which will, as a rule, increase as the child advances in its studies, and keeps pace with the higher education of universities and colleges. We need more physicians on our school board, who will take an active part in all matters pertaining to the education of our children, such as the amount of work to be done daily, the arrangement of desks, light, ventilation, hygiene, etc. They are better qualified to regulate such matters than any other class of persons.

Dr. H. L. E. Johnson: It seems to me that the hygiene of the modern public schools in this city is not so faulty as has been supposed. The hours of study seem to be short, and frequent recesses occur during the day. The ventilation and heating of these schools has already been vouched for by Dr. Woodward, the Health Officer, who has just spoken. The faults of school life here, from my observation, seem to be more marked in the private schools, many of which are located in dwellings, eminently unfitted for the purpose, where over-crowding, faulty lighting, heating, ventilation, etc., is the rule. In some of these schools the pupils do not have sufficient outdoor exercise, exercise being obtained, in some cases, on porches and in small back yards. The matter of feeding is also open to criticism. Children of different constitutions, temperament and physique are given the same diet. The bowel functions are almost always overlooked. Constipation from three days to three weeks is a common condition. In the girls' schools the function of menstruation is, in many instances, disregarded, no note being taken by the Superitendent, of its appearance, duration, etc. Pain at this time seems to be the only feature noted. I feel quite positive that the above conditions and neglect are largely responsible for many cases of anæmia, nervousness and weakened constitutions, so frequently seen in private schools.

Dr. Abbie C. Tyler referred to the other incidents in the life of a school girl—the dancing lessons, music lessons, long hours of practicing on the piano, and matinee parties on Saturday afternoons—as contributing to the strain put upon school girls, and thought that all the troubles should not be charged to the schools.

Dr. C. H. A. Kleinschmidt said: I believe it is a fact that entirely too much blame is laid at the door of the schools, and that the house and home, and other things outside of the school, have as much to do with the ills of the pupils as has the school itself. I am very far from denying that for the production of myopia the school is, to a very great extent, responsible. We see that from the fact that myopia is very much less prevalent in the lower grades than in the upper. The percentage of myopia gets higher, the higher the pupil goes in his classes, until he goes through the college and university where the percentage is highest.

A considerable number of cases of lateral curvature of the spine may also be traced to school life, but I believe that the cause of this trouble is not so apparent in our schools as formerly. Spinal curvature may also be attributed to other causes than the school.

It goes without saying that children may communicate infectious diseases to each other in school, and that chlorosis, anæmia, etc., may develop during the school age, but we should not lay all that at the door of the schools. I believe with Dr. Adams that a great many of these diseases originate outside of the school.

What I would refer to especially, however, are the remarks made at the last meeting upon the Kindergarten system. While quite agreeing with the speaker that the period of entrance into the public schools, might advantageously be set at eight years, at least for many years, I cannot agree to his severe arraingment of the Kindergarten system, which in reality amounts to its condemnation. The system as established by Froebel, when properly applied, has as its aim, to gradually, almost imperceptibly train the sense of sight, of hearing, touch, etc., and

at the same time not to neglect the physical well-being of the little ones, since most of their time is given to outdoor plays under careful supervision. To my mind, and I speak from personal experience and earliest recollections, great good can be accomplished by the method, for it tends to develop the elementary mental as well as physical capacities of the child. Of course, if at this early age the anatomical and physiological substances be lacking the system cannot succeed. This defect, if I understand the speaker correctly, was claimed, and formed the basis of his condemnation, for he said that during the first six or eight years of life, the part of the encephalion lying in the posterior fossa, and especially the medulla oblongata, developed more rapidly than the parts lying in the anterior fossa, especially the frontal lobes.

If this supposition referred to has weight, and in the mind of the speaker, it seemed to be at least one of the factors, I would say that investigation goes to show that there is little difference in the proportionate weight of the subdivision of the encephalon due to sex, stature or age. The weight of the brain at birth is about one-third of that at maturity. The development is very rapid during the first year, continues vigorously up to the seventh or eighth year, after which it is comparatively slow. But the relative weight of different parts does not show any very great development, as has been shown by careful investigations of numbers of brains, male and female, during all periods of life, beginning with birth and ending at from seventy to eighty years. The tables thus obtained show a slight difference of proportion at birth and for a short time after, from the proportions at maturity, but there is an early approximation to the conditions in the adult. Thus if their weight is to be considered a factor, there does not appear to be any ground for holding that there is an unequal development of the different parts of the encephalon during the first six or eight years of life.

But to my mind, the essential factor is not to enact the external elaboration, shown in the outer growth of the parts and in the formation of fissures, but in the internal elaboration, i. e., in the development of the central cells and their connections. Dr. Foster has shown tonight that at birth the brain is inactive, because it contains undeveloped neuron, and this is quite correct. It is, in fact, held by eminent authorities that after the third month of embryonic life, there is no further increase in the number of central nerve cells. After this all production ceases, all further development concerns an elaboration of immature cells, or an increase in size and connections of existing cells. The undeveloped cells are of course without physiological functions, but by becoming elaborated they increase the number of physiologically active cells. Undoubtedly the important automatic centers in the medulla oblongata, e, g., the cardiac vasomotor, deglutition and respiration centers are fully developed at birth, while in the higher encephalic centres there are a considerable number of immature and therefore physiologically inactive cells. These cells are separate and distinct from each other, but as they mature their axis cylinder grows, as do their dendritic processes, and form communication by contact with other cells; and with their growth in bulk and increase of protoplasm, there must be more material for production of energy and, by increased connections, greater scope of action.

Undoubtedly Dr. Foster is correct in his statement that growth and development of nerve cells depend upon a proper supply of normal blood, but there is another important factor and that is, physiological stimulation. In Dr. Foster's paper were cited experiments of Hodge and others on the effects of electrical stimulation of nerve fibers and its effect upon the nerve cells connected with them, and on the effects of direct stimulation of nerve cells, all showing decided changes, not only in the cell protoplasm but also in the nucleus matter and dendritis. Such stimulation continued as it was for hours, can hardly be called physiological. But normal stimulation of an immature cell, by way of its afferent fiber, must necessarily lead to increased growth, not only in bulk of cell body, but in the dendritis, thus

producing more extensive connections with other central cells, and such increased growth and metabolism will necessarily draw an increased amount of blood to the part.

This kind of brain gymnastics, if I may be permitted to use the term, must develop the immature central cells, just as proper physiological stimulation will develop the muscle cell, and, in my opinion, no period of life is more favorable to this kind of physiological stimulation of immature central cells than the period between four to seven years of age. Hence the value of the Kindergarten system, because it supplies not only, as its very name implies, the means for physical development by outdoor childish plays and sports, but also by appropriate mechanical devices brings out the sense of color life, movement, sound, and thus directly stimulates the cental nerve cells to physiological development. We all know that after removal of an eye, or a limb, changes due to loss of function are found in the central nerve cells connected with the organ or limb, and conversely we know that proper use of an organ stimulates and develops its central nerve cells.

Dr. Mary A. Parsons asked whether any one could give her any information in regard to the effect of child-labor upon the health of children. She had made attempts to find statistics on this point, but had been unsuccessful. All that she had been able to learn on the subject was that their condition was bad. They suffer to a great extent from children's diseases, and a great many die at an early age. She had been told that they were sometimes put to work as early as three or four years of age.

She had seen the effects of outdoor life in gypsy children. She had known probably a hundred, and they were all strong and healthy. The boys would rise as high as the eighth grade, and the girls would go to a convent, and they remained robust. She had also known a a number of athletes, such as circus riders and the like, and she had found that they were not at all an uneducated class. Many of these women were entirely free from the ailments to which women were liable; they married and became mothers of large families, and preserved their health.

Dr. J. W. Chappell said: Froebel, himself, at first, claimed that the best training a child could have up to seven years of age was from his mother, but later he realized that it was impossible for the mother, with her many exacting duties, to properly attend to the early education of her children, and hence he was led to organize the kindergartens. While Dr. Chappell thought the kindergarten method was all right, the method of obtaining teachers was sometimes open to criticism. He knew young girls who had not gone through the eighth grade of the public schools and who, without special training for kindergarten work, found employment as teachers in the kindergarten schools.

The men who had been cited as illustrations of the fact that an early education was not necessary in order to acquire eminence, were great in spite of their lack of early training and not because of it, and nearly all had expressed regrets for not having had this early training.

It was very easy to be misled in regard to the extent to which school life contributed to ill health of the pupils. He knew of a family of six children, who, all together, did not attend school as much as one child in one year, yet three had died of tuberculosis, while the remaining three were probably delicate. On the other hand he recalled a family of ten children who had attended the kindergarten and other schools regularly from an early age, and all were alive and well.

There is a method in vogue in the public schools of dividing the pupils of each teacher into two divisions, one composed of the bright, and the other of dull, pupils. The dull pupils take about two-thirds of the teacher's time, and the greater part of this time is devoted to four or five of the dullest pupils, and thus the rest of the class is held back. This is a great waste of time and energy. It would be better to separate these children, and, by studying their temperaments, train them by special methods. This discussion had clearly shown the necessity of the teachers hav-

ing a thorough knowledge of the child as well as of the subject matter to be taught. They should be familiar with psychology, anatomy, physiology, and the laws of health and hygiene. He also believed that the colored race required a different education from that of the white, and the girls required a different training from the boys. He used the term education in its broadest sense, including moral, physical and intellectual training.

The criticism that had been made on the lighting of some of the schools he thought was well taken.

Dr. W. W. Johnston, in closing the discussion, said: The range which the debate has taken shows clearly how great an interest the members of the Society take in the subject, and in any new light that may be thrown upon it. In order to study the question scientifically and reach conclusions that would have some weight it was necessary to study a large number of cases, and the reports compiled have been based upon observation of 109,000 school children. The reason why public school children were selected for examination, rather than children in private schools, was because there were not enough of the latter to base accurate conclusions upon. As Dr. Busey has remarked, the object of the paper was to set forth the conditions of health existing in school children, and then to try to trace the connection between their ill health and school life. The age at which children should be sent to school is an important question, but Dr. Busey, in his remarks, has already touched upon this point. The conclusion reached by him was that children should not go to school before eight years of age, and Dr. Foster has given the anatomical and physiological reasons why this age is the proper one to begin school life. I will call Dr. Klienschmidt's attention to the law of nature that organisms that reach an early development never reach a high stage of development; the strain of an organ in its immature stage wears out its excitability and causes its deterioration. Take the sexual organs for example; if they are stimulated at an early period they soon lose power.

Again, the function of vision is a brain function, and its strain involves a nerve tissue strain, and if the eye breaks down it is in part an evidence of premature strain on weak nerves. The question then arises, what is too early an age? That is an important question which I would not be able to consider fully now; it is a difficult thing to say when a child's brain is fitted for work.

It has been demonstrated that certain diseases exist in the school, and that certain diseases develop more rapidly at certain ages than at others. In order to demonstrate the phenomena of fatigue in children, Lasser and Bergenstein put a large number of children at work at examples in arithmetic and watched each child at work and studied its cerebration during that time. During the first hour's work it was noted that the work was not so efficient as during the second hour. This was a remarkable phenomenon. In the second hour the mental machinery got oiled up, and the work was better done. It was also noticed in the second hour, that the children had recourse to artificial aids in their work, and instead of doing their calculations mentally they made them on paper. As the work went on from hour to hour, the children resorted more and more to artificial aids, and then the work began to get inaccurate. Another remarkable fact noted in this connection was that at the end of the test the work of the girls contained fewer mistakes than that of the boys, showing that they were not so fatigued as the boys. Mosseau studied this question of fatigue even more carefully, his observations being made on carrier pigeons after prolonged flight. He put them at flight at long distances and when they arrived at their loft he studied the brain at varying periods.

Dr. Kleinschmidt interrupted to say that he did not think such tests were reliable, as a flight of 100 or 200 miles was not a physiological condition, but was decidedly pathological.

Dr. Johnston, resuming, said: I think it is a physiological test. That it is physiological is shown by the fact that the pigeons quickly recuperated, and on examination it was found that the nerve cells were restored to their normal con-

dition. It was found that muscular fatigue, if carried beyond a certain point, lasted a long time, and that both over-taxed muscle and over-taxed brain required a long time for recuperation.

The purpose of my paper was not to show that school life was the only factor in the causation of disease in children, but to show the connection between them. Working in factories, certain phases of home life, and other conditions under which children live, undoubtedly lead to disease in children, but there is no one thing which exerts such a marked influence upon the health of children as school life. It is a subject which physicians, both individually and collectively, should take an interest in. The great question to be settled now is in regard to the age at which children should be first sent to school, how much study they should have at different periods of development, etc. I believe that we can help to settle that question, and I do not believe that the school trustees can do without the assistance of the medical profession in determining it.

MEETING OF MAY 26, 1897. Dr. S. C. Busey, President, in the Chair.

THE ROENTGEN X-RAY TRAUMATISM.

Supplementary Report, dated April 6, 1897.

By Capt. W. B. Banister, Medical Department, U. S. A.

In the report on a lesion resulting from the use of the X-ray in the case of Capt. W., written October 14th, 1896, some erroneous conclusions were reached which further observations of the case enable me to correct. My excuse for submitting a further report on this case, covering a period of six months and up to the time the patient passed from under my observation, is my desire to place on record a case X-ray burn which has no parallel in medical literature up to date, either in the length of exposure (11 and 5-6 hours), or in the extent (15 in. x 8 in.) and intensity of the resulting lesion. It must prove of interest as illustrative of the effect of the X-ray when pushed to extremes, as no exposures of such length will probably occur again. In a recent letter from a surgeon in charge of the X-ray laboratory in Chicago, he informed me that they made exposures now of only ten (10) minutes duration. In my first report I made the prognosis that the lesion wou ld heal in two months a prognosis based on similar lesons, such as superficial burns, etc. In this opinion I was in error, as further experience demonstrated to me that there are no similar lesions; and any prognosis based on apparently similar precedents would necessarily be erroneous. At the end of six months the lesion has not healed, though the original extent has been reduced from 15 in. x 8 in. to 8½ in. x 3 in., and it will yet be many months before the patient will be cured. The beard which I reported as having fallen out and showing no signs of returning, did return in about six weeks from date of injury, and was noticeably thicker and coarser than before. The hair on the thorax and abdomen, where healing has occurred, has never returned. The entire denuded surface was covered with a false membrane, which in places was from a quarter to half an inch thich and thrown into folds. The central portion

of the lesion presented an open ulcer involving the entire thickness of the skin down to the superficial fascia. The most distressing feature of the case is the intense pain, which nothing but morphine will control, and which seems to have no relation to the extent of the lesion, as it is as intense now as it was four months ago, when the denuded surface was much larger. The use of morphine is much to be deprecated in a case of this character, where every nutritive function and all emunctories should be at their maxium of efficiency, but the pain is unbearable and the patient can secure no rest without it. The slowness with which this apparently superficial denudation heals is almost incredible. It must be in great part superficial, for nearly one hundred (100) square inches have healed without any cicatrix, but what remains must heal by cicatrization, by reason of the depth of the ulceration.

Treatment: Ointment of oxide of zinc, one per cent ichthyol, one-half per cent ichthyol in ointment of oxide of zinc; castor oil locally; aristol dusted over the surface; hot applications; proto-nuclein locally and internally; four per cent of cocaine hydrochlorate; hot baths once or twice a day; lanolin. With all these applications the surface was cleaned with corrosive sublimate solution, 1 to 100, but its effect was feeble antiseptically, and unsatisfactory, probably owing to the fact that the surface was constantly bathed in serum, which neutralized its effect. None of these agents were of any permanent benefit so far as controlling the pain was concerned, and all probably assisted to some extent the healing process, though no one seemed to have any more favorable effect than the others, except the aristol. The cocaine solution entirely stopped the pain for two days, and then was of no use. The hot baths modified the pain, and diminished the frequency of the paroxysms more than anything else, but owing to the location of the lesion, the patient could not have the surface immersed in hot water for a sufficient length of time, as it caused faintness. The pain of such a lesion, situated on an extremity which could be submerged for one or two hours at a sitting, could in all likelihood be entirely controlled. The use of the hot bath was suggested to me by a surgeon who was burned by the X-ray on the wrist, and found relief in that manner. The aristol cleaned off the false membrane, lessened the odor from the gangrenous tissue and gave the ulcerated surface a more vivified, healthy looking appearance than anything else. A tough, yellowish, cheesy looking material formed in the center of the ulcer early in its history, and seemed to extend to some depth, and the upper surface would become gangrenous and looked soft enough to be readily curetted off, but in attempting to do so, it was found almost as tough as leather. The patiens often complained that this cheesy mass felt as if a block of wood had been let into the abdominal wall. One case has been reported where this false membrane was curetted off, but an indolent nlcer resulted that was intractable. Another case has been reported in which skin-grafting was tried, but with no benefit.

There would seem to be no reasonable prospect of success in attempting skin-grafting on a surface covered with false membrane, and as curreting off the false membrane did more harm than good in the one case in which it was tried, and as the lesion in my case was healing slowly, very slowly, but steadily, I thought it best to banish meddlesome surgery, particularly as none of the cases reported compared in extent or severity to this one.

I have had reports of four cases in private letters, and all complained bitterly of the peculiar, unbearable pain that accompanied the healing process. At first there is scarcely any pain, but when in the reparative proeess the terminal nerve filaments begin to be regenerated, then this distressing feature is very much in evidence.

A constant and critical observation of the effect of the X-ray in this case for six months, forces me to the conclusion that the lesion is not due to the luminous X-ray *per se*, but to some other factor not yet isolated. Considering the intensity and degree of the irritation to the integument, it is not possible that, if the X-ray caused it *per se*, it could pass through such a delicate membrane as the peritoneum, or such delicate organs as the kidney or liver, all of which it traversed in this case without producing signs of irritation in them, inflammation or death. If by any chance it specialized its effects on the skin, it should have inflamed the integument where it emerged at the back of the patient, certainly to some proportional extent to the severe injury it inflicted on the integument at the front of the patient, where it first impinged. In my first report, written last October, I invited attention to the fact that the intensity of the irritation was greatest where the rays struck the surface perpendicularly, and noted the resemblance in that particular to the effect of heat rays, and I believe future investigations along that line will discover the real agent in the production of these lesions.

The patient became so tired of his surroundings and so desirous of an entire change, that it was considered advisable to comply with his wishes, and he left this post April 4th, for admission to a private hospital in Chicago. The lesion had decreased in six months from 120 square inches to about twenty-four square inches, which will compare very favorably with results in similar cases, when their relative proportions are considered.

DISCUSSION.

Dr. T. C. Smith said the continuation of the history of the case of X-ray dermatitis read this evening was very interesting, and in view of the importance of the matter he would request Dr. Smart to favor the Society with a further account of its progress up to the time when the record might be regarded as being complete.

Dr. C. W. Brown spoke of the similarity of the symptoms in this case, and burns produced by the rays of the sun, particularly the absence of pain at the time of reception of the burn, and for a time afterwards, and the uncontrolable pain later; also the tedious process of healing.

A STUDY OF INFLAMMATION.

By William P. Carr, M. D.

It seems strange, familiar as we are and have been for centuries with the various manifestations of inflammation, that it is only within the present decade that we have really understood its true nature and that even yet we are groping for a satisfactory definition of the word. For ages we have had to content ourselves with defining inflammation as a morbid process characterized by redness, heat, swelling and pain. But in inflammation, in bloodless structures, there is no redness, in many chronic inflammations there is no appreciable heat or

pain, and in low forms of life even in acute inflammations there is neither redness, heat nor swelling. If we regard the healing of aseptic wounds as inflammation, it is even doubtful if it should be called a morbid process.

Dr. Adami, in *Albutt's System of Medicine*, says: "Two courses are before us, either to employ the name strictly in accordance with the primative definition and thus only to include as cases of inflammatien those states where there are redness, heat, swelling and pain, rigidly excluding all cases in which these cardinal symptoms are not present, or on the other hand, departing from tradition to include as inflammations all those morbid processes which seem to have a cause and progress of the state characterized by the classical symptoms. The first course is impossable. It is as though one were to declare that red phosphorus is not phosphorus because in externals generally, it does not agree with the definition of the yellow form made years before the allotropic modification was discovered. We are now agreed that of the classical symptoms one, two or three may be unrecognizable, and in fact absent; and yet the condition of inflammation be undoubtedly present."

A number of surgical pathologists, it is true, have tried to limit the use of the term to cases in which the classical symptoms or a majority of them are present and associated with suppuration. They urge with Huter that inflammation only occurs when pyogenic organisms are present and state that when a wound heals aseptically it heals without inflammation. Adami characterizes this position as impossible. To me it seems absurd, as many violent inflammations, where all the classical signs are present terminate in resolution without apparent formation of pus, and on the other hand, Welch of Johns Hopkins, has shown that pyogenic organisms are frequently found in wounds that heal without suppuration. The definition of inflammation which has been most generally adopted, is that offered by Prof. Burdon Sanderson, in his excellent article in *Holmes' System of Surgery* as follows:

"The process of inflammation is the succession of changes which occur in a living tissue when it is injured, provided that the injury is not of such a degree as at once to destroy its structure and vitality." As pointed out by Adami this definition would include the hemorrhage into soft tissues following injury, like atrophic changes in the retina following its detachment by injury, and other changes that we cannot include as inflammatory phenomena. The definition therefore, is hardly satisfactory.

In an article in the *New York Medical Journal*, April 23, 1892, I made the following statements:

I. The following phenomena of acute inflammation have been actually observed, viz: A dilatation of the capillaries of the part, a slowing of the blood current, accumulation of leucocytes around the periphery of the vessels, complete occlusion of the capillaries in places by leucocytes, stasis, clearing of the lumen of the capillaries by the passing into the tissues, transformation of escaped leucocytes into connective tissue cells, and in septic inflammations, the presence of bacteria in the interior of escaped white blood cells, sometimes showing evidence of degeneration or digestion by the cell.

II. The escape of leucocytes from the blood vessels and their transformation into connective tissue also takes place normally and in normal tissues.

III. The escape of plasma also takes place normally, for the purpose of bathing and nourishing the cells of the body, and is returned to the blood-vessels by means of the lymphatics.

IV. The plasma that escapes in inflammation serves as a culture medium for the escaped leucocytes and round cells and exerts a germicidal action upon bacteria.

V. This escape of blood elements is therefore only an exaggeration of a normal process.

VI. Aseptic inflammation is only a process of repair.

VII. Thus we see that inflammation is but an exaggeration of normal functions and that it is a conservative process.

We see that it consists essentially of a warfare of the blood elements upon bacteria or other foreign bodies and a replacing of destroyed tissue by leucocytes or connective tissue proliferation under the stimulus of an excessive supply of nourishing plasma.

I proposed at that time to define inflammation as an unusual concentration of blood elements in a tissue for the purpose of repairing injury or repelling noxæ.

This, however, applies only to vascular tissues, while we now agree that inflammations exist in non-vascular tissues and animals.

The best definition, I think, that we can give is this—inflammation is the succession of tissue changes by which a living organism attempts to repair injury or protect itself from invading foreign bodies.

Let us accept for the present either this definition or that of Burdon Sanderson, for they are practically the same, at least in intent, and consider experiments bearing upon the subject beginning with the lowest forms of life and leading up to the highest.

We may thus determine what factors are of prime importance and what are added as we ascend the scale of life. Metschinkoff has shown that if one of the larger amœbæ be cut in two, the protoplasm of each piece rapidly closes over the cut surface so that no mark or scar remains. The part that retains the nucleus will grow and proliferate, but the other part soon disintegrates. This illustrates inflammation in its simplest form and, as you see, it consists simply in a repairing of injury in the simplest possible way. Miss Greenwood has shown that the amœba, when irritated by an interrupted current or by a weak solution of thymol, will extrude from its suface clear hyaline spherules or spherules containing crystals and granules. And this process resembles what has been frequently observed in certain leucocytes of higher organisms under the irritation of bacterial poisons. Here we have another element introduced, namely, the extrusion from the cell of a substance intended to neutralize a poison to act as an antitoxin. LaDantec states that amœba ingest indifferently any small unirritating particles that come in their way and that after ingestion a space or vacuole is formed around the foreign body. This vacuole becomes filled with a clear fluid of an acid reaction containing a pepsin.

The general protoplasm of the amœba and other protozoans is alkaline in its reaction. The vacuole, with its acid fluid and pepsin in the midst of the alkaline protoplasm, is the analogue of the stomach of a higher organism. The foreign body in the vacuole is either dissolved by the digestive fluid and used for nutrition or after a time extruded. In this way the amœba feeds upon diatoms and other bacterial forms. These observations have been confirmed by Krukenberg, Reinke, Metschinkoff and others, and Metschnikoff has observed that when the microsphæra and perhaps some other organisms are ingested by the amœba, the digestive fluid in the

vacuole is ineffective, because he thinks of some neutralizing substance excreted by the microsphæra. Here we have even a bacterium protecting itself by an antitoxin of double action. Under such circumstances the ingested organism multiplies and causes the death of the amœba. Here again we find an analogy to the ingestion of such germs as the tubercle bacillus by the white blood cells of man and higher animals. These observations show that even the lowest forms of cell life are capable of producing antitoxins and that the production of antitoxins is an important phenomenon. The investigations of Stahl and others on myxomycetes, a multicellular organism that may be classed either as an animal or a plant are interesting in this connection. The myxomycetes are masses of amœboid cells or plasmodiæ found on rotten wood, leaf mould, etc. They attain considerable size, often as much as a foot in length, and creep with a slow snail like or amœboid movement. Stahl found that this organism or mass of organisms, if placed on a moist surface near a drop of infusion of oak bark, would move actively toward and into the infusion, and on the other hand that it would move away from a solution of glucose similarly placed.

This was the first of a series of experiments upon the attraction and repulsion of protozoa and bacteria by chemical substances, except that Engleman had previously shown that certain bacteria showed a tendency to move toward an abundant supply of oxygen.

Stahl gave this property the name of trophotropbism, but Pfeffer, who made extensive studies in the same line, calls it chemiotaxis. This name has been generally adopted. Stahl subsequently discovered that certain plasmodiæ at first moved away from a two per cent solution of salt, would after a time, become accustomed or adapted to it, and especially if they had suffered for water, would move their pseudopodia into the salt solution. Thus a negative chemiotaxis may become positive. This also has a bearing upon inflammation in higher animals.

Passing from protozoa to metazoa, we have the experiments of Metschinkoff upon larval forms of echinoderms, particularly the astrapecten. These larvæ are found in the Gastrula stage. They are like sacks with open mouths and consist of an outer layer of cells or ectoderm, and an inner layer or endoderm, while the middle layer or mesoderm is represented by a comparatively few amœboid cells moving about in a semifluid substance between the ectoderm and the endoderm. If a foreign body, such as a grain of sand, be introduced into this body cavity between the ectoderm and endoderm, the wandering mesodermal cells make their way to it, attach themselves to it, and fuse into a plasmodial mass around it, thus walling it up. Small digestible objects may be taken in and dissolved by a single mesodermal cell, larger digestible objects may be surrounded by a mass of cells and digested, but it will be noticed that only the protozoans appear to have the power of extruding from themselves indigestible bodies and among the metazoa such substances are simply walled up and thus rendered innocuous. The same process is observed in the encysting of aseptic foreign bodies in higher animals.

A most remarkable property of some of the lower metazoa is their power of regenerating lost parts. The well known experiment of cutting the hydra into many pieces is a good example. Each piece will grow and in a short time become a fully developed individual. This is also seen much higher in the scale of life, as in the reproduction of amputated

legs in articulates such as the spider and lobster, and in reproduction of the amputated tail of certain lizards, and after slight injuries in the metazoa remarkable hyperplasia often follows, and this is also seen to a less extent in man and higher animals.

In worms the mesodermal cells are suspended in fluid in spaces that are strictly homologous with lymph spaces in higher animals, and they may be regarded as lymph corpuscles. Many of the Annelids, and among them the earth worm, have also a well developed vascular system. The genital organs of the male earthworm frequently become infected with gregarines. While these parasites are active in their movements, says Metschnikoff, they avoid the adhesion of lymph cells, but when they pass into the resting stage preceding spore formation, the lymph cells form a thick mass around them. The parasite then forms a thick cyst wall around itself, but in spite of this protection is frequently killed by the lymph corpuscles, and their death is evidently brought about by the action of a toxin exuded from the lymph corpuscles. While this was going on, no change was detected by Metschnikoff in the neighboring blood-vessels. Thus apparently we may have inflammation in vascular tissues without the blood taking any part.

Articulates have an imperfect hæmal system which is in reality nothing more than a complicated body cavity and the hæmal fluid and cells are mesodermal. Low forms of articulates such as the water flea (Daphnia) have only one form of hæmal cell. It has the property of taking up small invading bodies, spores, carmine granules, etc., and contains minute spherules that stain with basic analine dyes and is therefore a basophile. When irritated by a toxin these cells explode with great rapidity.

Higher forms of articulates such as the crayfish have two forms of hæmal cell or leucocyte that represent an interesting phase in division of labor. One cell is explosive, and when removed from the body cavity gives off fine blebs of its substance with great rapidity and in a short time nothing is left of it but the neucleus. This cell is phagacytic. The other form is much more stable and is loaded with large spherules. These spherules have great affinity for acid dyes, they are eosinophiles. This form never acts as a phagocyte but gives off the eosinaphilous spherules when irritated by a toxin and these spherules dissolve apparently forming an antitoxin.

Metschnikoff states that in studying a disease of the water flea caused by the monospora, an organism similar to yeast, he has observed the one form of leucocyte, which the water flea possesses react swiftly toward the spores, approaching them and forming a protoplasmic mass around them and eventually digesting them. When, however, the spores were very numerous some of them would escape and develop into mature torulæ. The leucocytes then showed no tendency to attack them, but would explode when approached by the torulæ. Under such circumstances the torulæ multiply and lead to the death of the water flea.

These experiments and many others show that among invertebrates the reaction to injury is principally a reaction of the mesoblastic cells against invaders, and repair of damage by proliferation of fixed mesoblastic, epiblastic and hypoblastic cells.

They tend to show that the antiseptic property of the hæmal fluid or body fluid is principally, if not entirely, derived from exudates or excretions of the mesoblastic cells, antitoxins.

Passing now to vertebrates, we have

many observations upon inflammation in non-vascular areas. The simplest observations have been upon the transparent tail fin of the young axolotl. This fish may be curarized, its tail placed under the microscope and on account of its thinness and transparency the effects of injury may be continuously observed even with high powers.

If a little carmine be injected under the epidermis, a few cells are destroyed and other connective tissue cells in the neighborhood become swollen. and their long processes drawn in. In a short time a few wandering leucocytes approach the injured region. By the next day a considerable number of them may be seen containing the particles of carmine and debris of the cells that were killed by the injury. There are no blood-vessels in the tail fin of these young fish, and the vessels nearest the tail are not affected. The leucoytes are the wandering cells already in the tissues of the tail.

Later these leucocytes wander away from the region of injury, bearing with them the carmine and debris and the fixed cells, that have already shortened their processes and become embryonic in appearance, proliferate and repair the damage. The same phenomena were observed in the tail fin of the newt by Metschnikoff with this addition: there was arrest of circulation in some of the nearest vascular loops, and some of the leucocytes came from these blood vessels. The same phenomena have been described by numerous observers, as following similar injuries to the cornea of rabbits and other animals. If the injury to the cornea be slight it may be repaired by the corneal corpuscles without vascular change, but if the injury is severe, marked changes occur in the vessels around the corneal margin. For instance, Jacobi injected a small quantity of a pure culture of the pyococcus aureus into the centre of the cornea of rabbits with the following results: The micrococci grew rapidly, extending along the lymph spaces of the cornea, making a branched mass with its centre at the point of inoculation. Around this mass is a sharply marked area in which the corneal corpuscles show evidences of degeneration. In eighteen hours leucocytes begin to accumulate around the area of degeneration. In twenty-four hours they are densely packed around this area and great numbers of them are seen passing along the lymph spaces from the periphery of the cornea.

The blood vessels surrounding the cornea are dilated and there is abundant evidence that the leucocytes are passing from these vessels into the lymph spaces and to the seat of injury. Many of these leucocytes take up and contain numerous cocci and many of them disintegrate, more or less corneal tissue also disintegrates and an ulcer appears. This ulcer may continue to extend or the process may be arrested by the massing of the leucocytes preventing the further extension of the cocci into the lymph spaces.

At the same time, there is an extension of capillary vessels into the cornea. The blood vessels at the periphery are distended, and from them fine new vessels pass toward the injured region.

At the same time many of the corneal corpuscle outside the necrosed area may be seen by staining to be undergoing mitosis and proliferating. This is the first step toward active repair. These newly formed cells finally replacing the cells that have been destroyed while the leucocytes wander back into the lymphatics carrying with them the debris.

Here we see leucocytes from the blood taking an active and important part even in a non-vascular tissue. Such

observations are made by similarly inoculating a number of eyes and examining one after another at frequent intervals.

When we come to vascular tissues we may again make use of direct and continuous observation as in the tail of a tadpole or mesentery of a frog. If the tail of a tadpole be treated by the injection of a little carmine, a well marked congestion is noticed in fifteen minutes, and a well marked determination of leucocytes. These leucocytes pass mainly from the blood-vessels, the few leucocytes previously in the tissues, appearing to take a small part in the process.

Here instead of slight reaction slowly developing, as in the axolotl experiment, we have rapid reaction and much greater determination of leucocytes.

We are all familiar withCohnheim's observations, upon artificially produced inflammation in the web of a frog's foot, or in the mesentery of a curarized frog, and many modifications of it; also with numerous experiments in producing septic inflammation. I shall therefore pass at once to a consideration of the various means employed as a response to injury in man and higher animals.

In *Albutt's System of Medicine*, p. 76, we find this statement, "A comparative study leads inevitably to the conclusion that the determination of leucocytes to the region of injury is the most constant and characteristic early response to injury recognizable throughout the metazoa, and that it must be regarded as the most important factor in the first stage of the inflammatory process. The vascular phenomena noticeable in the higher metazoa must be regarded as a second and highly important factor of later development and adjuvant. New tissue formation is the prominent characteristic of the later stages of the process. As among the protozoa so in the metazoa, the response to injury is consistently an attempt to repair the injury."

Now let us examine more in detail the part played by the leucocytes in higher animals and the reason for their accumulation at the point of injury. In 1846 Wharton Jones, for the first time pointed out that there was more than one kind of leucocyte in Mammalian blood, and described finely granular, coarsely granular, and neucleated non-granular cells. Since then many discriptions and classifications of leucocytes have been made by Max Schultze, Metschnikoff, Cerlich, Kanthack and Hardy and others, and these numerous descriptions have been somewhat confusing. Kanthack and Hardy, after full and very extensive observations have endeavored to reconcile the various classifications and recognize the following varieties:

I. Lymphocyte. Immature leucocyte; round neucleus deeply staining; scanty protoplasm; increased in numbers after food, diminished after starvation; not phagocytic; variable in number, not amœboid, may form up to 30 per cent of the leucocytes present in human blood.

II. Hyaline cell. Round or kidney-shaped nucleus of slight staining power; abundant protoplasm, hyaline; non-granular; actively amœboid and phagocytic, rare in blood (two per cent), abundant in peritoneal fluid, have been seen to undergo mitosis.

III. Coarsely granular oxyphile—(Erlichs Eosinophile.) Large horse-shoe shaped neucleus (in man), relatively large spherules in protoplasm; highly refractive; staining deeply with acid analin dyes; abundant in cælonic fluid, in serous cavities, in interstices of areolar tissue and in bone marrow; rare in blood (2–4 per cent) amœboid; non-phagacytic.

IV. Finely granular Oxyphile—(Erlichs Neutrophile), smaller in man than the last; neucleus branching or polymerous, staining deeply; granules very

small and spherical; feeble oxyphile reaction (in man), abundant in blood (20–70 per cent of all leucocytes), absent from cœlonic fluid. Actively amœboid and phagocytic, the most common form of pus cell.

V. Coarsely granular Basophile.—Found free in cœlonic fluid; round neucleus staining very feebly; spherules large, numerous and staining with basic analin dyes; somewhat similar cells found stationary in connective tissue spaces, absent from human blood in health. Non phagocytic.

VI. Finely granular basophile. Spherical, smallest of the wandering cells, trilobed neucleus clear cell substance, containing great numbers of fine basophile dots—found in human blood in small numbers (1-5 per cent) increased after meals.

It will be seen that the finely granular oxyphile and basophile are found chiefly in the blood, while the coarsely granular oxyphile and basophile are found chiefly in the body fluid, and the lymphocytes and hyaline cells are common to both.

We do not as yet know the relation of these cells to each other, but it seems probable that the lymphocyte is an immature form common to all, and the hyaline cell is chiefly derived from proliforation of peritoneal endothelium.

The immature lymphocyte is non-phagocytic, as are also the coarse granular cells, both oxyphile and basophyle. The lymphocyte probably plays no part in inflammations until it develops into some of the other forms. The coarse granular cells seem to act by extruding these granules or spherules, which dissolve in the serum and give in antitoxic properties or bactericidal properties. There is some doubt about the fine granular basophile as it is rare and observations on it are consequently difficult. The hyaline cells and the finely granular oxyphiles are phagacytes.

I need say nothing about phagocytosis. as it is well understood and proven.

Attempts have been made to belittle the importance of phagocytosis and cell action and to magnify the importance of the antiseptic properties of the serum, but it seems quite clear that the serum in inflammation owes its antiseptic properties to substances excreted or secreted by the cells or dissolved from broken down or exploded cells. For instance, it has long been known that when blood is shed many leucocytes disappear with great rapidity by dissolving or exploding.

Landois states that the leucocytes are ten times as numerous in circulating blood as in shed blood. Nuthall has shown that serum from shed blood is much more powerful an antiseptic than serum in the body. Lubarsh has shown that it required about 16,000 virulent anthrax bacilli to kill a rabbit, by injection into the circulating blood. Less than that number would produce only transient disturbance. This showed that the blood of the animal was able to destroy only about 16,000 anthrax germs, but a very small quantity; fifteen drops of the serum of a rabbits blood will quickly kill 16,000 of these germs. Many experiments prove that blood serum is more antitoxic or antiseptic than circulating plasma, provided the leucocytes are allowed to break up in it. If they are kept out, however, the serum has slight antiseptic properties, and its germicidal power may be increased by adding leucocytes.

Denys and Haval have shown that exudates of the dog, when freed from leucocytes by filtration or centrifugal action, lose their bactericidal power, regaining it when the cells are reintroduced. Kanthack and Hardy's experiment with frog's lymph is easily repeated and has been verified by numerous observers. It is extremely interesting and

is as follows: If a hanging drop of frog's lymph with a few anthrax bacilli added, be watched for four or five hours the following phenomena will be observed.

I. The coarsely granular oxyphile cells are strongly attracted to the bacilli; they move toward them and apply themselves to their surface. Their protoplasm ordinarily sluggish exhibits quick streaming movements. Next the eosinaphile granules are discharged, and the bacilli begin to show signs of degeneration. During this stage the hyaline cells remain quiescent and are not even attracted toward the bacilli.

II. The hyaline cells proliferate and eventually approach the masses of oxyphile cells surrounding the bacilli. They fuse with these, forming a plasmodium around the chains of bacilli, and for the next hour or two nothing can be clearly made out as to the action of individual cells.

III. The first step in the dissolution of the mass is the separation and wandering away of the oxyphile cells. Next the hyaline cells containing remnants of the bacilli within vacuoles slowly break apart.

IV. A third set of cells with basophile granules is observed to approach during this last period. As to their functions Kanthack and Hardy are doubtful.

This description is taken from *Albutt's System of Medicine*, p. 91.

The observations upon inflammation have been so numerous that a list of them would make a book. I have only offered a few of the more interesting experiments from which our knowledge of the subject has been derived. But even from these I have mentioned I think the following deductions are plain:

I. That aseptic inflammation, when no foreign body is in the tissues, consists of, first, a removal of dead cells or debris by phagacytes, and second, a replacing of these destroyed cells by connective tissue proliferation in deeper structures and by epithelial proliferation over the surface.

II. When an aseptic foreign body of organic nature is present in the tissues (such as a piece of catgut) it may be removed in the same manner by plasmodial digestion and phagocytosis.

III. When an inorganic indigestible foreign body is present, the attempt is made to digest it in the same way, but this failing and higher organisms not having the power of extruding such objects as does the amœba, the next resource is to wall it up. The connective tissue cells proliferate and form a capsule around it.

IV. The phenomena of septic inflammation are exceedingly variable and depend upon such factors as the health or active condition of the body cells, the kind of germ, the number of germs, whether or not a toxin is introduced with the germ, the previous condition of the germ, etc. But it becomes evident that a process is set up having three ends in view, first, the destruction of the germ; second, the removal of debris, third, the repair of destroyed tissue.

The first end is sometimes accomplished with ease, sometimes with difficulty, sometimes not at all. This phase of inflammation is a true warfare of blood cells upon the invaders and victory may crown either side or the combat may be prolonged indefinitely when the forces are nearly equal.

It would be impossible in such a paper to go into all the varieties and possibilities of septic inflammation, but we may notice that the attack upon the invading germs is made directly by the phagocytes, in some cases, and in others not until an extracellular action has been exerted upon them by the coarsely granular oxyphiles—by the discharge of a vol-

ley of antitoxic eosinophile spherules. After the enemy has been weakened by this fire, the phagocytes rush in and a sort of hand to hand scrimmage begins tne "*al machete*" fight to the finish with no quarter. As a rule, it seems that the phagocytes attack only the more unresisting germs, or germs that have been weakened by the antitoxin, but there are exceptions, for example, the Klebs-Leffler bacillus, the gonococcus and the tubercle germ, are vigorously attacked by phagocytes and very frequently multiply in the protoplasm of the phagocyte and cause its destruction. Even under such circumstances, the germ is held in check for a time and prevented from getting into the lymphatics and general circulation, and in the meantime connective tissue cells are proliferating and preparing to wall in the whole fighting mass of cells and bacteria. This is usually the third resource resorted to If successful the walled in mass of germs and leucocytes may die and dry out to a mass of cheesy debris that may remain indefinitely in the tissues without doing further harm. Or the walled up mass may continue to survive the germs killing the cells of the inner layers of the cyst wall while new layers are continually placed on the outside. This condition you will recognize at once as an abscess. It seems to be the object of nature to have this cyst wall conduct the fighters to the surface of the body, break externally and expell the whole turbulent mass. You know how this is sometimes successful and sometimes fails by breaking on the wrong surface. A temporary abscess wall may be formed of leucocytes and coagulated lymph, especially in serous membranes, and indeed parts of various viscera may be utilized to form part of the abscess wall in the peritoneum and thus shut off the germs from the general cavity. We have long been familiar with the way in which lymphatic glands act as traps to imprison germs and destroy them, or failing in this, extrude them by suppuration.

It is almost certain that there are many details with which we are yet unacquainted; many facts go to show that different forms of cells are present in different kinds of inflammation. The alterations in number and character of blood cells has long been of value in diagnosis in some diseases, leucocythæmias and anæmias.

Neusser has been able to exclude certain diseases and diagnose others by the presence or absence of a certain basophile, etc., and it is quite possible, with a more complete knowledge of the blood changes in inflammations, that in the future we may find them of as much diagnostic value as we now find urinary examinations. My principal object in this paper, however, has been to show the real nature of inflammation, and some of its interesting phenomena, and I think you will all agree with me that it is the effort of an organism to restore itself to the normal, and that as good a definition of it as we can give will be as follows:

Inflammation is the succession of tissue changes, by which a living organism attempts to repair injury or protect itself from invading foreign bodies. It may be septic or aseptic. Septic inflammations are the ones that concern the surgeon and many surgeons wish to confine the meaning of the word inflammation to septic conditions. But we are forced to admit aseptic inflammations, such for instance, as sun-burn, and many aseptic inflammations that are of great interest to the physician, such as are produced by chemical substances.

DISCUSSION.

Dr. Forwood said: Inflammation in the light of modern pathology, should be regarded as essentially a physiologi-

cal process directed towards the repair of wounds and injuries and the protection of the animal organism against the injurious effects of infectious germs and foreign bodies. The discoveries in bacteriology had not disturbed the validity of the old classic definition of inflammation, except to limit its sphere and define its relations to certain other physiological and pathological processes. The long and intimate association of inflammation with suppuration had given it a bad reputation. But now that the cause of suppuration as well as the means of preventing it had been discovered, inflammation appeared in its true light as the process and the only one by which wounds could be healed or injuries repaired. Inflammation like other physiological processes sometimes went beyond its normal limits but it was always defensive, protective and reparative in its tendencies. Suppuration on the other hand was simply an infectious disease resulting from the introduction of certain pyogenic organisms from without. Its association with inflammation was accidental and a complication often preventable and not always present. Inflammation necessarily preceded suppuration, the infectious germs finding a lodgement only in the inflammatory products or in the fluids and cells escaped from the vessels after injury. When the injury was upon the external or internal surfaces infection was almost sure to follow unless some means of prevention were adopted, but when it was situated in the deeper tissues, as in case of simple fracture, repair would take place under healthy inflammation uncomplicated by infection. The whole field of aseptic surgery was based upon these principles and the mere change of names calling suppuration inflammation, as some authors had done, and inflammation something else could only result in confusion and would not alter the facts which must eventually prevail.

Dr. Robt. Reyburn said: The proper conception of the phenomena embraced under the term inflammation underlies the whole domain of therapeutics. My own idea of inflammation is that it is the effort of the living organism to resist and repair injury.

DISCUSSION OF DR. J. FORD THOMPSON'S PAPER ON "TREATMENT OF COMPOUND FRACTURES."

Dr. Arthur Snyder said: In relation to compound fractures, he found the same methods in use that had been in vogue from the time of Hippocrates. One feature that impressed him particularly was the use of a lever in the reduction of fractures of this character, by introducing it over one fragment and pressing the other in place. He did not see why it should not be useful at the present time.

Referring to his own hospital practice, Dr. Snyder said that he found it very difficult to get the young men to keep probes out of the wounds and use their fingers instead, as A. Pare had advised in 1545, enlarging the wound if necessary for reduction or removal of loose fragments.

Dr. Snyder had been under the impression that the suspension apparatus for fractures had been invented by Dr. Nathan Smith. He had found, however, that that apparatus was old, very old. By the use of this form of treatment in fractures, there was less overriding of the fragments. He thought that the anterior splint or the gutter of wire formed very valuable adjuncts to plaster of Paris in the treatment of these conditions.

Dr. Snyder thought the general impression was that "ligatures," wiring, had only recently come into use. He found that they were used in 1775, and the method of employing them was about the same as at present, except that the wire was simply wound around the fragments. Of course the results attained at that time were not nearly so good as at present, on account of the inflammation accompanying these injuries.

In regard to plaster, he did not think there was anything better, but it had to be applied in the proper way to get the best results. The application of the plaster directly to the skin did not interfere with the healing of the wound. At one time nothing but vaselin, for the purpose of smoothing down the hairs, was used under the plaster in simple

fractures. Of course when this method was employed it was necessary to have the patient constantly under observation. It would not do in the country. He had seen cases where plaster would not do, and the leg had been left out of it with excellent results.

In regard to the necessity of wiring recent fractures, he thought there were but few cases where this was necessary. In cases of fracture of the patella he thought it should always be done. But he did not see the necessity for wiring simple fractures. They could be reduced and kept in position by other and better means.

Some months ago Dr. Hunter Maguire of Richmond, had written a paper advocating the slitting up of the superficial fascia in these injuries to prevent tension of excessive swelling.

Relative to wiring fractures, a case was brought into the Emergency Hospital last winter which illustrated its objectionable character in ordinary cases. A man had a telegraph pole fall on him, and fractured his leg. The fragments were wired together, but did not do well. It was put up in plaster and no better results were attained. It was put into a wire gutter and elevated and began to improve at once. The injury was complicated by a severe lymphangitis and cellulitis. The wires came out, and about four inches of fibula had to be taken out. He tried to cause union of the tibia by driving in little staples, such as are used by carpet layers. The theory was all right, but the staples were too soft and would not drive, and a drill was used in order to expedite matters. The man went along until he was discharged from Emergency Hospital and taken into Garfield. He had seen him hobbling along this morning with a pretty bad leg, but the foot was saved.

He believed that suspension and fixation was the best method of treating these conditions, as it, in addition to other advantages, permitted the patient to move about in bed with more freedom and was more comfortable.

Dr. John Van Rensselaer said: Every one who had dressed many fractures must agree with Dr. Thompson in regard to plaster. It certainly was superior to any other dressing. Of course the main object in dealing with compound fractures was to render them simple fractures if possible. He thought that plaster could be used in nearly all cases of fracture, except perhaps in Colles' and even then he thought it might be used if it was cut down early and the parts inspected, and the proper dressing put under the plaster so as not to allow the bones to be driven out of position. In fractures of the femur, great care should be exercised. He had seen a case recently where the fracture had been put up in plaster, and after a month it was found that sufficient traction had not been made on the limb, with the result that there was non-union due to over-riding of the fragments. The trouble was remedied, the bones rubbed together, and a favorable result ensued. This was a case where both femurs had been fractured, and in one the result was perfect, while in the other there was simply the loss of a months time.

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Original Articles.

Typhoid Fever in the District of Columbia.

I. FREQUENCY, CAUSES, MORTALITY AND PREVENTION.

BY G. M. KOBER, M. D.

Of 54 American cities with a population of over 50,000, tabulated in 1890 by Hazen, Washington stands No. 7 on the list as regards the death rate from typhoid fever. This is all the more lamentable, because it has increased with approximate uniformity during the past 15 years; that is to say, while the typhoid fever death rate in 1881 was only 3.6 per 10,000 residents, it has gradually increased with only slight annual fluctuations until for the year ending June 30, 1896, it reached 8.3 per 10,000. During that year there were 228 deaths from this disease, besides 12 deaths from typho-malarial fever which should have been reported as typhoid. Murchison places the death rate at 17.45 per cent, which, strange enough, appears to be none too high for this city, as the mortality in 7 of our hospitals in the autumn of 1895 was 17.56 per cent. Assuming, then, that each death represents only 6 cases, there would have been in that year 1,440 cases of typhoid fever, a morbidity of 49.8 per 10,000 residents.

This would indeed be discouraging if investigation had not revealed the significant fact that the disease is more prevalent in the suburbs and in sections where people, in the absence of sewers and a general water supply, are compelled to resort to box-privies and wells. Thus, for example, while the typhoid fever death rate in the suburbs and northeast in 1895 was 8.44 and 8.76 per 10,000, the region west of Thirteenth Street to Rock Creek and north of the Potomac to Florida Avenue, with its 52,000 residents, furnished only 1.71 per 10,000, or a slight fraction over that of Lynn, Mass., which city has a rate of 1.6 and stands at the head of American cities as regards exemption from this disease. This difference is probably due not only to better sanitary environments, but also to the fact that the residents of the better part of our city are especially careful in the selection of their drinking water.

While my official inquiry in the Fall of 1895 showed that 12.4 per cent of the 500 cases investigated contracted the disease at various summer resorts, and

that a few cases were spread through infected milk and other channels, the undue prevalence of the disease in the suburbs and certain sections was clearly due to an impure water supply and defective sewer system, particularly the former. The absence of sewers compels recourse in about 13,000 houses to box-privies and makeshifts by which the soil and ground water are liable to pollution with infected dejecta. Leaky and defective sewers and abandoned box-privies and vaults have produced the same result, and since the outlets of the sewers in the southeast and southwest part of the city are below tide-water level, the backing up of sewage constitutes an additional source of soil and water pollution.

At all events, of 436 cases of typhoid contracted in the city in the Summer and Fall of 1895, 289 were largely consumers of well water and 132 were largely consumers of Potomac water, and in 26 of 70 samples of water examined by Drs. Kinyoun and Andrade, sewage bacteria were actually found. It is also a noteworthy fact that the houses provided with box-privies and makeshifts furnished the highest percentage of typhoid fever cases.

The role these boxes play in the pollution of soil, water and air is best judged by the fact that during the fiscal year ending June 30, 1895, the sanitary inspector reported 4,372 as "full," 746 as "leaky," 5,201 as filthy and 230 as dilapidated. These makeshifts, even if there were no wells, would still be a source of danger, in so far as they favor the transmission of germs by means of flies infecting the food.

With this evidence, the profession could scarcely fail to recommend the immediate closing of every well, wherever a better water supply could be obtained, the early completion and extension of all necessary sewers, and the abandonment of all box-privies within the city limits.

In 1896 Congress passed a law which has enabled the health officer to abolish, during the year ending June 30, 1897, 875 box-privies, and the extension of the sewer system has steadily progressed.

In regard to the closing of wells, I am pleased to report that there were only 133 surface pumps in service June 30, 1897, a decrease of 138 during the past six years, and also that upon the petition of the residents of Takoma and Brookland, Potomac water has been introduced and extended in these suburbs, which suffered severely from typhoid fever in 1895. Since 1895 twenty artesian wells have been driven in different sections of the city, in spite of modest warnings and the opinion of competent scientists, that the geological formation of this basin precludes the possibility of securing a water free from surface contamination. Two of these wells —one 247 feet deep—have been abandoned as dangerous to health; an analysis of the water showed it to be little less than diluted sewage; this I believe furnishes the best argument for the abandonment of every surface and deep well in the city.

There has been a gratifying improvement in the typhoid fever rate, for during the year ended June 30, 1897, there were only 147 deaths, or 5.3 per 10,000, which is the lowest death rate from this disease since 1884.

While this is suggestive, especially in the face of the fact that the rainfall was 7.06 inches below the average annual rainfall, which is 43.6 inches, it would be unwise to conclude that this was consequent upon the sanitary reforms referred to and the education of the public, or a closer supervision of the milk supply,

until we know more of the life history of the typhoid fever germ.

While I consider the prompt abandonment of every well and box-privy extremely desirable, because it eliminates two important factors in the dissemination of the disease, I fear the danger will not be removed until we secure a pure general water supply, because cities, both at home and abroad, in which there has been the most marked decrease in the typhoid fever rate are those in which a pure drinking water has been substituted for a pre-existing contaminated one.

There are now over 25,000 people living in towns along the Potomac River which constitutes our general supply, and since this stream receives directly or indirectly the drainage not only of these towns, but also of every hamlet and farmhouse washed by its tributaries, and as typhoid fever prevails among the inhabitants and sewage bacteria have been repeatedly demonstrated in the tap water of our houses, the possibilities of infection with the typhoid bacillus are, alas! too numerous.

Let us advocate, therefore, sand filtration of the Potomac water, extension and completion of the sewer system, and in the meantime filter and boil our drinking water, Pasteurize our milk and thoroughly disinfect the excreta of typhoid fever patients.

II. SYMPTOMATOLOGY.

By S. C. Busey, M. D.

My experience and observation point to the conclusion that classical typhoid fever, as described by authors, is comparatively rare, and that the clinical and milder forms are most frequent and vary so much in the initial symptomatology that a definite diagnosis can but rarely be made at first examination, and many times not decisively without exclusion of malarial and other fevers. A continued fever with a daily maximum and minimum temperature, loss of strength, diminished appetite, mental inaptitude, headache varying from slight discomfort to intense pain and a sense of indisposition, however mild and variable any one or more of such symptoms, is sufficiently significant to arouse the suspicion of the alert clinician and admonish him of the uncertainty of a hasty diagnois excluding typhoid fever. Such a chain of symptoms is always suggestive of typhoid fever, which can only be excluded by the subsequent course of the fever and concomitant symptoms, or more speedily and decisively by the recent adjuncts which science has contributed to differential diagnosis, such as Widal's reaction and the presence or absence of Laveran's plasmodium in the blood. The classical picture of daily temperature elevation by regular gradations of the maxima and minima during the onset is rarely seen, but the maximum is frequently reached during the first week. The daily excursion is very variable, but always significant of the grade of intensity, as well in the mild as in the severe forms, the wider the excursion the more indicative of a satisfactory course and favorable prognosis. When the daily excursion is not more or less than one degree during the period of full development the danger of protracted continuance and slow convalescence is imminent, with threatening exhaustion, and consequent doubtful prognosis.

During the initial and fully developed periods the pulse is, for the most part, the measure of the temperature, recording eight to ten pulsations for every degree of temperature above the normal, but in the later stages, perhaps, after the middle of the second week, it is also the

measure of exhaustion. In infants, children and females, especially young and unmarried women, the pulse is subject to very variable fluctuations, usually with increase of rate. Very sudden and exceptional elevations of temperature and pulse-rate occur during the period of menstrual molimen, which as a rule needs no special attention beyond the knowledge of the etiological factor. The quality and frequency of the pulse demand close and watchful attention, with special regard to tension and rhythm.

Changes in condition and appearance of the tongue follow the course of the disease, and usually afford significant indications of the grade of the disease, extent and condition of the intestinal lesions and exhaustion. In this as in other diseases too little attention is paid to the changing conditions of the tongue.

The abdominal symptoms are more or less marked, according to the grade of the disease, in very mild cases frequently so slight as to be barely appreciable. Tenderness and gurgling are frequently absent. Diarrhœal conditions are rarely troublesome in mild cases, and frequently absent in severe forms, but in all cases, except in such as are attended with persistent constipation, purgative or laxative medicines, and over and improper alimentation may quickly set up profuse and intractable diarrhœa. Constipation, more or less persistent, is a troublesome complication in many cases, requiring most careful and conservative management. Tympanites to a greater or less extent is usually present, but when due exclusively or mainly to improper alimentation is amenable to judicious regulation of the dietary. Appreciable enlargement of the spleen is an inconstant symptom.

The rose-colored spots are absent in a majority of the cases, and when present are so few in number and so indistinct as to be valueless either as a diagnostic symptom or indication of the duration of the disease.

The intensity and duration of the fever is the chief element of danger. High temperature is not the only evidence of intensity of the fever. Narrow limits of excursion, individual susceptibility to febrile temperature and lessened vis resistentiæ add intensity, in many cases, to the fever when the maxima only show moderate elevation of the body heat.

With rare exceptions, convalescence is established with sub-normal minima and normal maxima temperatures.

III. DIAGNOSIS:

(*a*) The Value of Widal's Test (The Dried Blood Method).

By Walter Reed, M. D.

The space at my disposal will necessarily exclude any reference to the already extensive literature and limit my remarks to my own experience with this test.

The method followed in all examinations has consisted in mixing a faint straw-colored solution of the dried blood with an equal quantity of a culture of the typhoid bacillus, in 2 per cent glucose bouillon, grown always at room temperature. The blood solution has been quickly made by rubbing the margin of the dried drop with a loop of sterilized distilled water. The preparation, fixed as a hanging drop, was then examined with a 1/6 objective. The time allowed in which the reaction should take place was fixed at one hour, although practically less time than 30 minutes has proven quite sufficient.

The culture used was obtained from the spleen, at autopsy, about three years ago, and has been transplanted on agar,

at room temperature, at intervals of about six weeks.

The samples of blood were received from two sources, viz: military stations and the public hospitals of the city of Washington, to which have been added a few cases from private practice. Concerning the former, a detailed statement will be given in the Annual Report of the Surgeon General, U. S. A., for '97–'98, and hence only the briefest comment will here be made. Nothing whatever of the clinical history of these cases was known by me at the time of making the laboratory tests.

The following are the results obtained from army posts:

Cases with well defined clinical symptoms of typhoid fever 27; reaction positive 25; incomplete (on 7th and 20th days) 1; negative 1 (blood taken on the 23d day in the case of a negro soldier). A test with the serum of this case, made by Dr. Howard, U. S. A., later in the disease was positive.

Febrile cases with ill-defined symptoms 24; reaction positive 19; doubtful 1; negative 4. It is important to note in this connection that of the atypical fevers of the South and Southwest, 19 in number, which were diagnosed as Florida fever or Texas fever, all gave a positive reaction with the dried blood method. Of the negative cases 1 gave a history of typhoid fever in 1890 (test negative on the 19th and 23d days of the disease); 1 was treated as malarial fever until the 16th day, when the test was negative; 1 was of an irregular type of fever with negative reaction on the 27th day, and one with negative reaction on the 7th and 13th days was considered by the attendant not to be typhoid fever. The case with doubtful reaction was diagnosed as remittent fever, amenable to quinine, and was the only case of fever, probably not typhoid, which gave a slight agglutination with scarcely any loss of motility. Of 19 non-febrile cases, embracing various diseases, all gave a negative reaction.

The earliest reaction was obtained on the 4th day, the latest on the 97th day.

The results obtained in cases of fever from the hospitals of this city were as follows: Number of cases 52; positive reaction 44; negative 8. Of the 44 cases giving a positive reaction, in 41 the clinical symptoms indicated typhoid fever, while three were of an irregular type. Two of these showed a normal temperature on the 11th and 14th days respectively, while the third, later, proved to be typhoid.

Of the cases giving a negative reaction, 3 were malarial (parasite found); 4 came to autopsy with the following result: acute peritonitis 1; miliary tuberculosis 2; general streptococcus infection 1. The remaining negative case (blood repeatedly examined) was probably one of tubercular meningitis.

Of nine cases from the private practice of various physicians, 7 gave a positive and 2 a negative reaction. The subsequent history of the positive cases points to typhoid fever, while of the negative cases the diagnosis in one was changed to croupous pneumonia, and in the other to æstivo-autumnal fever (parasite found.)

Putting these cases from military and civil life together, there were 75 cases in which the clinical history indicated typhoid fever. Of these 73 gave, at some stage of the disease, a positive reaction; one an incomplete and one a negative reaction (23d day).

Of 27 cases of atypical fever, in which the diagnosis must have remained in doubt, a positive reaction was obtained in 22, a slight reaction in 1 and a negative result in 4. These negative cases have already been referred to.

Certainly a test which will clear up the doubt as to the true character of those ill-defined fevers, not entirely confined to the Southwest, and heretofore diagnosed as simple continued fever, Florida fever, Texas fever, etc., must prove of the greatest value.

My own experience with low dilutions of the dried blood would seem to show that the danger from pseudo-reactions in non-typhoid blood is not as great as would be inferred from the literature on this subject. Perhaps the particular culture used by me and the growth at room temperature have had something to do with the absence of these false reactions. While acknowledging the importance of quantitative dilutions of both serum and blood for exact scientific results, I am constrained to believe that we have at our command, in the simple laboratory test proposed by Johnston, a most valuable aid to diagnosis, and one which, when properly conducted, will rarely lead to a wrong conclusion. The most serious drawback to its usefulness is its unreliability during the early stage of the disease.

(*b.*) Ehrlich's Diazo-Reaction.

By Andrew Stewart, Ph. D.

The weight of evidence as to the reliability of the diazo-reaction as a diagnostic agent in cases of suspected typhoid fever goes to prove that, while it may be almost invariably obtained in the urine of patients suffering from that malady, it is by no means exclusively peculiar thereto, but has been observed as well in such affections as tuberculosis, malaria, rheumatism, measles, pyæmia, scarlet fever and erysipelas; and, in fact, in nearly all diseases where pyrexia is a prominent feature. It has, however, been noticed by Munson and Oertel in a few cases where the temperature was not only not high, but remained even below the normal—for instance, in diabetes mellitus. These two investigators have very satisfactorily shown (*New York Medical Journal*, Vol. 57, 1893, p. 127) that the diazo-reaction really depends upon the presence of aceto-acetic acid (CH_3. CO. CH_2. CO.OH), and further, that in every instance where it proved positive, a reaction with ferric-chloride could be obtained. In regard to typhoid fever, the reaction may, therefore, be considered merely of negative value, and assumes importance only as supporting the physical examination and the symptoms; and in conjunction with other tests—notably Widal's Serum Test and the bacteriological examination of the urine. A positive reaction is to be discovered in the urine usually not before the fifth or sixth, and not later than the twenty-second day.

The most satisfactory mode of applying the test is as follows: Make up two separate solutions: (1) 50 c. c. strong HCl and 2 grams of sulphanilic acid in 1000 c. c. dist. water; (2) 0.5 grams nitrite of soda in 100 c. c. dist. water. Prepare fresh, before each test, a third solution containing 40 c. c. of (1) and 1 c. c. of (2); and of this temporary solution take about 10 c. c. and thoroughly shake together with an equal quantity of the urine, in a medium-sized test-tube. Now, pour carefully down the side of the tube about 1 c. c. of strong ammonia water, which will lie in a colorless zone above the mixture in the tube. If the reaction be positive, a distinct red-colored band will form at the juncture of this zone and the mixture; and on shaking and pouring the contents of the tube into a porcelain capsule of about 150 c. c. capacity, about two-thirds full of water, a salmon-red color will appear. The writer has found that, if

the test-tube be now partially filled with water, a most delicate salmon-pink color will be observed, particularly on viewing the column slantingly from above.

IV. GENERAL MANAGEMENT, AND TREATMENT OF CERTAIN COMPLICATIONS.

By D. W. Prentiss, M. D.

Space does not admit in this article of more than a mere outline of the treatment of typhoid fever as found in the District of Columbia.

These remarks, therefore, are limited to a brief mention of the general management and of the two most fatal complications, hæmorrhage from the bowels and perforation.

1. It is of great importance that an early diagnosis be made in order that treatment may be commenced as early as possible. In this locality, diarrhœa, iliac tenderness and tympanites are usually absent and constipation is the rule.

It is a safe rule, as far as treatment is concerned, to consider every case of continued fever, which does not yield to quinine, as typhoid. The disease for which it is most likely to be mistaken is tuberculosis, either of the meninges or of the lungs. Widal's test should be used—but one should not wait for the result which may not be conclusive in the early stages. The necessity of early treatment is enforced by the fact that mild cases are so often converted into severe ones by going about and improper diet as in the "walking cases," and from the well-known fatality among patients who travel after the development of the disease.

The treatment consists of—

1. Rest in bed in a well ventilated room, and avoidance of all disturbing causes.

2. Bland diet—sterilized milk with lime water, white of egg, beef juice, Somatose—which may be varied, if desired, and there is no diarrhœa, with chicken or mutton broth cooked with rice or barley, or scraped beef.

It is no longer considered essential to keep the patient on absolute liquid diet. On this point in a recent paper by Dr. Shattuck, of Boston, this writer says, in a paper before the section on Practice of Medicine, Amer. Med. Assoc. Phila., June, 1897 (Jr. Am. Med. Assoc., July 10, 1897): "For a number of years I adhered as strictly as possible to an exclusive milk diet in typhoid fever until at least a week had elapsed from the date of the first normal evening temperature. I closed my ears to the clamors of adults, and my eyes and heart to the tears of children, as I now believe unnecessarily." Dr. Shattuck does not consider relapses due to indiscretions in diet, but to a fresh invasion of the bacilli from within. For drink, give water freely, acidulated if grateful with hydrochloric acid or lemon juice.

3. Intestinal antiseptics.—The most valuable are calomel and salol. At the beginning give calomel one centigram, ipecac one centigram, sodium bicarb. five centigrams every three hours, either in the form of tablets or in powders with sugar of milk, until they operate freely on the bowels, and later give same combination when needed to correct constipation, aided, if not effective, by castor oil in orange juice. If tympanites and diarrhœa develop give salol in doses of from twenty-five to fifty centigrams every four hours.

Diarrhœa should seldom be checked. If exhaustive, administer first castor oil and follow by calomel, opium and bismuth. I have for many years given, from

the beginning, twenty-five to fifty centigrams of quinine each morning, and have thought it influenced favorably the course of the disease. It acts as a tonic, antipyretic and antiseptic. The so-called antipyretics, antipyrine, acetanelid, phenacetin, etc., are absolutely inadmissible. They are uncalled for when temperature is moderate, and when temperature is high, are dangerous from their depressing action on the heart.

Death by heart failure has been all too frequent from this cause.

The only antipyretic to be used in typhoid fever is cold water.

The Brand method of "tubbing" and its favorable results needs only to be mentioned. I think it is not often resorted to in private practice in Washington on account of the difficulty of carrying out details.

Lack of skilled assistants to handle the patient and give proper rubbing, and want of bathing facilities often preclude its use in families of moderate means.

Then also the immediate terrifying effect on the patient mnst be considered.

Dr. Osler says (Pract. of Medicine): "Personally I sympathize with those who designate it (the Brand method) as entirely barbarous. To transfer a patient from a warm bed to a tub at 70°, and to keep him there twenty minutes or longer, in spite of his piteous entreaties, does seem harsh treatment. A majority of our patients complain of it bitterly and in private practice it is hardly feasible."

It is not looked upon favorably either in this country or in England.

It is not always easy to satisfy the friends, or the patient, if he be properly conscious, of the value of the ordeal. The only justification for the treatment is in the favorable statistics.

Cold sponging takes the place of "tubbing." To be applied every 4 hours, if temperature rises to 102°, and more frequently if temperature goes higher. I have been accustomed to giving a mixture

℞.

Spts. Aeth. Nitr..... 25
Syr. Limonis..... 12
Liq. Ammon. Acet. *ad.* 200

Tablespoonful in ½ tumblerful of water every 4 hours. This combination stimulates secretions, especially of the kidneys and skin, and is a heart stimulant through the nitrite of ether and the ammonia.

Should there be diarrhœa, substitute neutral mixture for the spirit of mindererus. If it disorders the stomach, it must be stopped.

Mention of the treatment of hemorrhage and perforation must be very brief to bring it within the limit of this paper.

Of hemorrhage:

1. Prophylactic—The treatment already laid down; especially rest in bed, bland diet and intestinal antiseptics.
2. Medicines—Acetate of lead and opium; not forgetting the possibility of lead poisoning,
3. Cold—Ice bag or cold coil to the abdomen; ice by mouth; cold affusion by the rectum.

Of perforation:

1. Prophylactic—As above.
2. Opium—"Opium splints" to the bowels.
3. Laparotomy.

The earlier laparotomy is performed the better the chance of success.

V. IRRIGATION OF THE RECTUM AND COLON AS AN AID IN TREATMENT.

By William W. Johnston, M. D.

Rest, diet and good nursing are of the utmost value in the treatment of typhoid fever. After these, the cold bath can claim to be a valuable curative agent, for although at first used to reduce temperature only, it has been found to have a happy influence upon all the correlated symptoms.

Is there any other rational measure that can be employed to lessen the intensity of the symptoms? The intestine is the seat of infection and of the principal lesion. The fluid in the intestinal canal contains toxic products of specific and non-specific activity, and the fermentative changes are more rapid than in ordinary intestinal catarrh. There must be, therefore, extraordinary dangers from absorption of toxins, and these dangers bear a close relation to the extent of fermentation and decomposition in the intestinal contents, to the quantity of contained fluid and to the length of time it is retained in the intestinal canal.

Hence the effort has been made to lessen this danger by antiseptic treatment, medicines being given by the mouth with the intention of inhibiting cell activity in the intestine and of destroying the specific bacillus. But so far, no faith can be placed in any drug, in any dose, as meeting this indication with any degree of success.

As the colon and rectum are the receptacles of the products of intestinal decomposition, and as absorption of toxins increases with the increase in the amount of decomposition and with retention of fluid in the bowels, it follows that prevention of fermentative processes and the emptying of the lower bowel are two objects to be aimed at in treatment. If we can succeed in keeping the colon empty and clean, and at the same time in treating it antiseptically, as we would treat any cavity filled with decomposing and virulent material, we would be doing something toward removing an element of danger in this disease.

Were it possible to go beyond this and cleanse the ulcerated surfaces in the small intestines, the treatment would be still more successful.

The diarrhœa of typhoid fever is not due essentially to the ulcerative processes, but to the accompanying catarrh of the small and large intestines. Any treatment, therefore, that acts favorably in lessening catarrhal inflammation is beneficial, and of the various means at our disposal for this purpose, antiseptic irrigation is one of the most effective.

A decided benefit to be derived from the emptying and washing of the colon rests upon the fact that in typhoid fever, especially in cases of severe character, the bowel is by no means emptied with the effort at stool. Even the rectum is only partly emptied, each stool represents the overflow of an over-distended rectum. I have frequently demonstrated this by passing a tube into the rectum immediately after a fluid stool and seeing the escape of several ounces of retained fluid. This shows that the bowel retains the excess of fluid, a small part only of its contents being passed, and in this retained material the process of decomposition with resulting absorption is constantly going on.

So much for theory. I have used this method—irrigation of the bowel—sufficiently often in typhoid fever to gain confidence in it in certain cases. In severe attacks, with profuse and frequent, offensive stools, especially where there

was stupor or delirium, improvement in the character of the stools soon followed and, coincidentally, the nervous symptoms also grew better. In cases with constipation the irrigation can most advantageously be used for emptying the bowel at regular intervals and making it antiseptic at the same time.

Whatever merit this procedure has, its success depends entirely upon the manner of its employment. The "irrigation," which consists in filling the lower bowel, by means of a fountain syringe, with a pint, quart, or more of water, which the patient expels afterwards, is worse than useless. It positively does harm and increases danger by over-distention of an inflamed bowel. This is what is called "irrigation," and it is the method usually employed by nurses.

The only proper method is to use a long, velvet-eyed, soft rubber rectal tube, fenestrated at the sides, through which a warm antiseptic fluid is injected into the bowel with a Davidson's syringe. The patient lies on his side, close to the edge of the bed, which is protected by a rubber cloth so arranged that the bed will not be wet. The tube is passed up to, or a little within, but not through the sigmoid flexure. Not more than four to six ounces of fluid are thrown in at one time. The nozzle of the syringe is then removed from the rectal tube and the fluid then escapes into a waste bucket, which is on the floor at the side of the bed. The patient suffers no distress, and there is no voluntary expulsion of the injected fluid. This process is repeated until a quart or more has been employed, and until the escaping fluid runs quite clear. The intervals are to be regulated by the amount of diarrhœa and by the odor of the stools; two to three times in twenty-four hours are usually sufficient; once if the stools are not more than three daily.

In very bad cases, with frequent offensive discharges, one irrigation every three hours may be necessary. But the patient may be fatigued by too frequent treatments, as he has to be moved and kept on his side each time. As the stools lessen the intervals are increased, and when constipation follows diarrhœa, one irrigation daily suffices; the bowel being sufficiently emptied by the washing or voluntary efforts are thereby excited to expel the solid rectal contents.

VI. INTESTINAL ANTISEPSIS, AND THE WOODBRIDGE TREATMENT.

By H. C. Yarrow, M. D.

For more than ten years, as the result of considerable experience in the treatment of typhoid fever, not only in the army but in private practice, I have been convinced that there are no methods of treatment that give universally such excellent results as the use of intestinal antiseptics; and I feel a special obligation to my personal friends, the editors of this journal, for giving me the opportunity briefly to advance my views upon the subject.

Thirty-five years ago when I commenced the practice of medicine, having just come from under the teachings of that eminent Professor and Instructor, the late Dr. George B. Wood, it became my duty to treat many cases of typhoid in the military service, and the various remedies recommended by this great master I tried and tried again with varying success. Patients of strong vitality and excellent recuperative powers got well, but in those of delicate constitu-

tions it was something of a chance if recovery took place, in fact, about one-third or more died.

Ten or fifteen years since, considering the matter carefully, it seemed to me that intestinal antisepsis was certainly the rational method of treating typhoid fever, and for a considerable length of time I followed the method advocated by Dr. Bartholow, which, no doubt, every one knows, consisted mainly in the administration of small doses of carbolic acid and tincture of iodine. To my amazement and pleasure my results were very much better than I had ever before had in the treatment of typhoid. Subsequently I was strongly impressed with what might be called the mixed treatment of Yeo, of England, which consisted in the administration of chlorinated water, cold affusion and the use of quinine in moderate doses. If I had been pleased with the results following Dr. Bartholow's treatment, I was more than delighted with the plan recommended by this distinguished English physician, and the more cases I treated the more firmly was I convinced that intestinal antisepsis was the proper method of treatment. When the Woodbridge plan of treatment was first called to my attention I must confess it required some little courage to administer the doses of calomel recommended, as often and for so long a period as he deemed advisable, but after having used it with most excellent result, I made up my mind that at least in my hands it had succeeded better than any plan of treatment I had hitherto used. I may say without vanity that since I have commenced to use this particular plan of treatment I have never lost a case of typhoid fever, and instead of returning to my home worrying about all possible complications: perforation, hemorrhage, hyperpyrexia, etc., and the other symptoms that we have been dreading for years, I feel no longer the anxiety which harassed me in former years. There can be no objection to using in addition to the special medication recommended by Dr. Woodbridge, the cold affusion and quinine, as proposed by Dr. Yeo, or the systematic use of the cold bath as employed by Brandt, but it seemed to me eminently unsatisfactory to treat a symptom alone, that is to say, the high fever, with cold baths, without directing any attention to the intestinal lesions. I am sure I have seen typhoid patients perish from their physician's blind confidence in an improper and irrational use of cold packs and that within a few years in this city.

It has been urged against the Woodbridge plan of treatment that it is eminently unscientific and that it is impossible to render the whole course of the intestinal canal antiseptic. It may be that we cannot render the canal aseptic, but clinical experience has shown that we can to a very wonderful extent ameliorate and control the symptoms of typhoid with intestinal antiseptics.

In addition to this no one would presume to-day to deny that in the bile we have a most potent antiseptic and one which recent researches seem to show is antagonistic to the ptomaines and leucomaines of the typhoid organism. The principal early treatment, according to the plan of Dr. Woodbridge, is the administration of numerous small doses of calomel intended to stimulate the secretory activity of the liver and increase the flow of bile. We know that guiacol, menthol, thymol, eucalyptol, etc., all of which are used by Dr. Woodbridge, are among the most potent antiseptics. Guiacol I consider one of the best antipyretics that I ever used; in fact in one case of typhoid which I attended three years ago, simple friction

over the abdomen with fifteen drops of guiacol produced such a rapid defervescence that the patient had a chill. We found after this experience that eight drops was quite sufficient.

Did space permit I should be glad to give a record of various cases that I have treated with intestinal antiseptics, but being limited I cannot now do so. I may say, however, that under the antiseptic plan of treatment advocated by Dr. Woodbridge, I expect, and have found that my patients' temperatures become normal between the tenth and twelfth days, and since I have pursued this special plan of treatment I have had no unfortunate complications, no anxieties and no deaths.

VII. THE SURGICAL TREATMENT OF INTESTINAL PERFORATION.

By John Van Rensselaer, M. D.

The surgical aspect of typhoid fever is quite limited, being confined almost exclusively to the treatment of perforation, which happily is an accident of rare occurrence. Of nearly five thousand cases collected from various sources and studied by Fitz there was a mortality of 6.58 from this cause alone. In former times it had been thought the only possibility of recovery from this lamentable complication lay in the formation of adhesive barriers through the natural efforts of the peritoneum; in recent years attempts have been made by early exploration to remedy the trouble.

Intestinal perforation appears to occur most frequently in men, seldom in children, and at any time from the first to the sixteenth week; the perforations may be one or many.

Nor is there any definite relation between the severity of the typhoid and the occurrence of perforation; in one-fourth of nearly two hundred cases the course of the disease was stated to be mild.

Palliative treatment is absolutely inefficacious where the fecal extravasation is rapid and abundant, while operative measures have sometimes been successful if instituted sufficiently early.

The severity of the typhoid is a potent factor in the prognosis. If the patient be very low when the accident occur, laparotomy will hold out comparatively little hope; while if the attack be mild, the probability of success is equal to that in many other conditions where the abdomen is opened and the patient's strength is fairly good.

In a word, of about twenty-five reported cases of operation, there were eight recoveries, nearly 30 per cent.

VIII. REMARKS ON SERUM DIAGNOSIS IN VETERINARY MEDICINE.

By C. F. Dawson, M. D.

Within the past year much has been written upon the diagnosis of certain infectious diseases by what is known as the Serum Test of Widal. This line of investigation has been followed mostly in the diagnosis of typhoid fever. In his paper read before the American Medical Association in June of this year, Professor Welch credits Charrin and Roger with having noticed in 1889 "that the bacillus pyocyaneus grows in the form of clumps in the serum of animals rendered immune from this bacillus." The same phenomenon was observed by Metchnikoff in 1891, Issaeff in 1893 and 1895, Bordet in 1895 and Durham in January, 1896. But Durham seems to

have been the first person to apply the test practically. He and Gruber used the test for the differentiation of bacterial species, and for the determination of a previous attack of cholera or typhoid fever. As Professor Welch remarks, "it seems but a small step to determine whether a reaction which had been demonstrated to characterize the serum of animals and human beings, which have recovered from infection, may not also be present during the period of infection." It was Widal who took the step and who first published his researches, and to him must go the credit of the discovery, although he was not really the first to discover the general principle. Widal's first communication was presented to the Société Médicale des Hôspitaux on June 26, 1896, antedating Durham's paper read before the Royal Society nearly six months. Since Widal's first paper many investigations have been made and various suggestions for the application of the test have been offered. Any mode of procedure which would require the withdrawal of more than a few drops of blood and the subsequent cultivation of the mixed serum and culture, is manifestly beyond the range of the general practitioner. It has been the aim of many investigators to obviate these difficulties. Wyatt Johnston first introduced the "dried blood" method and he and others have employed it with good results. The advantages of this method are apparent, since the films can be transported any distance, and kept until convenient to make the test. It also gives the physician an opportunity of staining and preserving, for future reference, preparations from all cases treated. That the serum test now universally used in human practice, is available in the diagnosis of diseases in the lower animals has been demonstrated by the writer (N. York Med. Journal, Feb. 20, 1897), who first noted the phenomena described by Widal and others, in hog cholera.

Observations made upon the serum of animals which had passed through an attack of hog cholera several months previously, also give results comparative with typhoid fever. There were some slight changes in the sequence of events, however, in the case of the immunized animal. Here complete inhibition of motility distinctly preceded agglutination, supporting the theory of the existence of a "paralyzing" and an "agglutinating substance in immune sera." Moreover, there was an absence of the oscillatory movements of the small clumps of bacteria usually observed.

While we have not observed the agglutination of the bacteria in the circulating blood in hog cholera, it is possible that it does take place, and that the bacterial embolic infarctions, observed in the dense organs, originate in this way.

The writer has obtained good results in the employment of the blood-film method of Johnston in the study of the reaction in hog cholera, a disease resembling typhoid fever in man, and which probably becomes epidemic from the same unsanitary conditions; although the micro-organisms of the two diseases have different characters.

Swine plague, an infectious pneumonia which often exists with hog cholera, has not yet given us a decided reaction. The organism of swine plague, a member of the rabbit septicæmia group, furnishes a striking instance of the wisdom of using fresh cultures and of making check observations on them. In bouillon cultures over one day old, this organism has the property of forming zoogloea-like masses which resemble the reaction masses in typhoid fever and in hog cholera.

The National Medical Review.

GEORGE W. JOHNSTON, M. D.,
AND
THOMAS E. McARDLE, M. D.,
EDITORS AND PUBLISHERS.

WASHINGTON, D. C., November, 1897.

Editorial.

SALUTATORY.

The present number of the NATIONAL MEDICAL REVIEW is the first to appear under its new management. As was announced in the October issue, the editor who has so successfully carried the journal through the seven years of its existence, has terminated his connection with it and removed to a distant city. It is certain that all readers of the REVIEW will miss the genial personality that Dr. Stowell infused into its pages; and while they regret his departure, will wish him well in his new field of labor. We, his successors, earnestly hope that we may gain the same degree of confidence and esteem that was so generously bestowed upon him.

It will be our policy, as editors and publishers of the REVIEW, to increase as far as possible its scientific value, and to make it an effective medium for the diffusion of knowledge and the furtherance of the interests of the medical profession. And especially do we desire the REVIEW to be closely identified with the city of its publication, to be the means of making known the results of some of the great scientific activities of the capital, and to subserve in every way the cause of public health, and the honor, dignity and prosperity of the local profession. We look with full assurance to the medical fraternity of Washington for sympathy and support; and with such aid, seek to make the only medical journal published in the District of Columbia, worthy of the National Capital.

Our relations with our subscribers and exchanges cannot fail to be pleasant. Our business associations with our advertisers will, we trust, remain as satisfactory as they have been under the previous management of this journal. We shall receive advertisements only from firms of the very highest class, and shall look after the interests of our patrons with the most scrupulous care, that their influence may be increased in the territory which the REVIEW so thoroughly and systematically covers.

Finally, we beg the kindly indulgence of our friends for any oversights or delays that may attend this, the first issue of the REVIEW under our management.

TYPHOID FEVER IN THE DISTRICT OF COLUMBIA.

The investigation, undertaken some time since by the Medical Society of the District of Columbia, clearly showed that we have in Washington a very high rate of morbidity from typhoid fever. It likewise demonstrated that in the sections of the city where there were the most wells and box-privies there also the disease was most prevalent. Shortly following the closing of some of these wells and the institution in certain localities of a better system of sewerage, there was noted a decided diminution in morbidity from this affection. The relation between cause and effect in this instance seems most apparent.

The Medical Society, showing its interest in public health, carried through its investigation with signal zeal and discretion, and our people are now beginning to reap the advantage of its work. But the subject should not be allowed to rest. Much remains to be done, and the REVIEW would urge the importance of renewed effort, and would offer its most hearty co-operation in any steps that may be taken to study the causes and to diminish the frequency of typhoid fever in the District of Columbia.

Report of a Case of Gun-shot Wound of the Abdomen; Thirteen Lesions of the Intestine; Operation; Recovery.

By J. Ford Thompson, M. D.

W. P., white, aet. 16, was admitted to the Garfield Hospital at 3.30 P. M., September 6, 1897, suffering from a penetrating abdominal wound, accidentally received about one hour previously.

The wound was made by a 22-caliber rifle ball fired at a few yards distance, and was situated about an inch below the umbilicus, and a little to the right of the median line. The patient was in excellent condition, with no evidence of shock or hemorrhage. The fact of penetration was evident from a slight protrusion of omentum. I ordered him prepared at once for operation, during which he vomited quite freely. Ether was the anesthetic used. An incision of about four inches in length was made in the middle line from the umbilicus downward, a little deflected to the right above, so as to include the wound. The piece of protruded omentum was perforated by the ball, and as the opening was near its lower border, and the part appeared deeply congested, it was ligated and removed. Several ounces of blood escaped from the incision. A search was then begun of the small intestines by eventration, and a wound of entrance and of exit was found separated by a narrow piece of gut. There was no fæcal discharge, but a slight eversion of the mucous coat. The edges were trimmed and both wounds closed by Lembert stitches in two rows, the first including the edges of the wound, excepting, of course, the mucous coat. The narrow strip of gut was inverted and also stitched. Finger compression was used to control the fæcal circulation. The part was cleaned by warm sterilized normal salt solution, and washed in hot towels dipped in the same solution, which were renewed during the operation. A further search of ten or twelve inches revealed several more wounds, one of which was at the under surface and involved the attachment of the mesentery, which was bleeding quite freely. The bleeding points were ligated, and this wound was closed as the first had been, although the operation was more difficult on account of the position of the wound and the mesenteric injury. The other wounds near by were similarly treated. Farther on, there were four or five wounds quite near together, and I first thought it would be necessary to excise several inches of intestine, but finally decided to close them separately as before, which was done without difficulty. I then examined the remainder of the small intestine, but found no other wounds, and then the large intestine, in which I found, in the descending portion, another double wound, which was closed in the same way. The ball had evidently traversed the abdomen from right to left. A search was then made for the ball, all accessible parts being examined for it and for other probable wounds, but neither the ball nor any other wound was found. The pelvic cavity was then cleansed of blood and the intestines lightly sprayed with the salt solution and replaced. From only one wound was there an escape of fæcal matter and that was slight. In all there were thirteen wounds closed, including those of entrance and of exit. The abdominal incision was closed with through and through silk-worm gut sutures. Duration of the operation, one and one-half hours. Drs. Nesmith and Hartsock rendered valuable assistance. The temperature during the first four days ranged from 99° to 101°. September 12, it reached 102°, and on the 14th it was 103°, after which it gradually fell, reaching the normal September 17. He suffered from nausea and abdominal pain more or less during the first week, but there was no distention, and the wound was perfectly satisfactory in appearance. He was kept on fluid diet, and on the fifth day he was given one-quarter grain doses of calomel until three grains were taken, after which an enema was given, followed by sulphate of magnesia in small doses, with the desired result.

Notices and Reviews.

A PRACTICAL TREATISE ON SEXUAL DISORDERS OF THE MALE AND FEMALE. By Robert W. Taylor, M. D., Clinical Professor of Venereal Diseases in the College of Physicians and Surgeons, New York. In one handsome octavo volume of 448 pages, with 73 illustrations and 8 plates in color and monochrome. Cloth, $3.00, net. Lea Brothers & Co., New York and Philadelphia.

The proper regulation of the sexual function is essential to the health of humanity; and the physician, who is a good citizen as well as a good doctor, should familiarize himself thoroughly with this subject, in order that he may not only cure disease of the genito-urinary apparatus, but with an enlightened mind use his influence toward the overthrow of morbid sentiment, the inauguration of wise legislation and the utter extinction of charlatanism.

Dr. Taylor, in the book before us, is not biased by visionary theories but portrays the various forms of sexual disorder on the basis of advanced knowledge of the anatomy, physiology and pathology of the various portions of the sexual sphere. Symptoms are made secondary to the various conditions which give rise to them, and the consideration of these conditions places it within the power of the physician to rationally treat an entity and not pursue a shadow.

THE ESSENTIALS OF OBSTETRICS. By Charles Jewett, M. D., Professor of Obstetrics in the Long Island College Hospital, Brooklyn, New York. In one handsome 12mo. volume of 356 pages, with 78 illustrations and 3 colored plates. Cloth, $2.25. Lea Brothers & Co., Publishers, New York and Philadelphia, 1897.

The long experience of this author as a teacher has eminently fitted him for the preparation of an elementary treatise upon obstetrics, and the volume before us will prove of the greatest service to students of this branch of medicine. The arrangement of matter is both systematic and logical, and the views of the writer are concisely and clearly expressed. The dogmatism at times apparent will not be hurtful, but on the contrary, beneficial to the student preparing for examination in midwifery. The free employment of illustrations, both in black and in color, is of great aid in elucidating the text. The publishers have done their part in a manner to leave nothing to be desired.

ABOUT CHILDREN: Six Lectures given to the Nurses in the Training School of the Cleveland General Hospital in February, 1896. By Samuel W. Kelley, M. D., Professor of Diseases of Children in the Cleveland College of Physicians and Surgeons (Med. Dept. Ohio Wesleyan Univ.); Pediatrist to the Cleveland General Hospital; Consulting Physician to the Cleveland City Hospital; President, 1896 and 1897, Ohio State Pediatric Society; Editor *Cleveland Medical Gazette*. 180 pages. Price, in buckram, postpaid, $1.25, net. Cleveland: The Medical Gazette Publishing Co., 1897.

This book is not "a family doctor," and contains no directions for medical treatment. Although originally intended as a course of lectures to nurses, yet it is so full of instruction of the very best character that it cannot fail to be valuable to intelligent parents, school teachers, medical students, aye, even to practitioners. The author evidently has had an extensive clinical experience with the medical and surgical diseases of children, whilst his clear and vigorous style adds much to the value of the book. The publishers deserve great credit for the manner in which they have presented the volume to the public and the profession.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By James M. Anders, M. D., Ph. D., LL. D., Professor of the Practice of Medicine and of Clinical Medicine in the Medico-Chirurgical College, Philadelphia; Attending Physician to the Medico-Chirurgical and Samaritan Hospitals, Philadelphia, etc. Philadelphia: W. B. Saunders, 1897. 1,287 pages. Price, cloth, $5.50, sheep or half morocco, $6.50.

A large sale is foretold for this very valuable book. It is just what the student needs as a text-book, furnishing, as it does, a thorough exposition of our present knowledge of the practice of medicine in general, and of the diagnosis, differential diagnosis, and treatment of disease in particular. The historic development of the subjects is briefly treated, whilst the differential diagnosis has in many instances been tabulated with such great care as to surely prove of the greatest value to the student. Another point to be commended is the consideration of the pathology of an individual affection before taking up its etiology, thus making for the student a continuous story of each disease. The bacteriological studies are complete and the treatment of the various diseases is given in such a manner as to serve as a guide for the beginner. The general practitioner will find in this book plenty of up-to-date matter thoroughly digested and clearly presented. Only lack of space prevents a more complete review of this admirable work.

TUBERCULOSIS OF THE GENITO URINARY ORGANS, MALE AND FEMALE. By N. Senn, M. D., Ph. D., LL. D., Professor of Practice of Surgery and Clinical Surgery, Rush Medical College, etc. Illustrated. Philadelphia: W. B. Saunders, 1897. 317 pages. Price, $3.00, net.

With his usual industry and untiring zeal, Professor Senn has, in this book, given to the profession a mine of information hitherto but little developed. The time is fully ripe for a work on tuberculosis of the genito-urinary organs and the preparation of such a volume could not have fallen into better hands. It is believed that the profession have not given this subject the attention it has deserved. The appearance of this treatise will serve a double purpose. It will first of all call to mind the possibility of such affections, and this fact being fully recognized, stimulation will be given to the discovery of cases by the modern diagnostic resources employed in the differential diagnosis between tubercular and other inflammatory affections of the genital and urinary organs. In general, it is safe to say that when the way is blazed many will follow to discover whether truth or error is found beyond. Prof. Senn's book will fill a void in every doctor's library, and the importance of the subject cannot be fully realized until the volume is carefully studied.

ESSENTIALS OF BACTERIOLOGY: Being a Concise and Systematic Introduction to the Study of Micro-Organisms for the Use of Students and Practitioners. By M. V. Ball, M. D., Bacteriologist to St. Agnes' Hospital, Philadelphia. 3d edition, revised. In one volume, with plates and illustrations, some in color. Cloth, $1.00. W. B. Saunders, Philadelphia.

It is not surprising that this little book has already reached its third edition. The subject of which it treats is one that is fascinating in itself, and enters into every department of medicine. There are many who are devoting their lives to the pursuit of knowledge in this direction; men who are adding new facts in multitudes to our store of information.

But there are those who, as students, are just beginning the study of bacteriology, and a host of others to whom, among the crowding incidents of active life, no time is left for the reading of elaborate treatises. To such as these this volume will be a boon, containing as it does a wealth of information, compressed and condensed, it is true, but sharp, clear-cut and convincing.

LECTURES ON THE MALARIAL FEVERS. By William Sydney Thayer, M. D., Associate Professor of Medicine in the Johns Hopkins University. D. Appleton & Co., New York.

The work of Thayer in connection with malarial fever needs no introduction. His name is already closely identified with this subject in America. He is an authority whom we all recognize and to whom we all do honor. The work under consideration contains the results of his labors, with the nature and scope of which we are already familiar through the monograph previously written by him in collaboration with Hewetson. To an exhaustive knowledge of the literature of the subject in all languages, Thayer adds the results of a series of original investigations of inestimable value. The book represents the length and breadth of our present knowledge upon this topic and excites the admiration of all who take pride in American achievement. The make-up of the volume is excellent; the plates admirable in their fidelity and beauty of execution.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY FOR THE YEAR 1896. Vol. VIII. Cloth, 250 pages. New York, 1896.

The eighth session of this society was held in Montreal, May 25, 26 and 27, 1896. The present volume of *Transactions* was edited by Dr. Floyd M. Crandall, and his work is very satisfactory. Amongst the many valuable papers may be found the Society's investigation into the use of antitoxin in the treatment of diphtheria in private practice, which elicited such marked commendation at the time of its publication in various medical journals. Dr. Samuel S. Adams, of this city, read a comprehensive report on the Comparative Results of the Treatment of Diphtheria, with and without its Antitoxin, in the District of Columbia. Dr. Adams read also two other papers, A Case of Congenital Pharyngo-Œsophageal Stenosis; and Temporary Insanity Following Typhoid Fever. Dr. George N. Acker, likewise of this city, presented two instructive papers on Organic Disease of the Heart Following Scarlet Fever, and Sarcoma of the Thymus and Bronchial Glands. The thirty-five papers read at this meeting are valuable contributions to the study of Pædiatrics.

PATHOLOGICAL TECHNIQUE: A Practical Manual for the Pathological Laboratory. By Frank Burr Mallory, A. M., M. D., Assistant Professor of Pathology, Harvard University Medical School, etc., and James Homer Wright, A. M., M. D., Director of the Laboratory of the Mass. General Hospital, etc. In one volume of 397 pages, with 105 illustrations. Cloth, $2.50. W. B. Saunders, Philadelphia.

In the opinion of the authors of this volume every autopsy at its outset presents for solution a problem in which the known quantities are the clinical symptoms and physical signs that have been observed during life, while the unknown quantities are the gross and microscopical lesions that are subsequently found to exist and the causes that have produced them. In the volume before us the study of these unknown quantities is undertaken with singular care and fidelity, and the lesson is emphasized, that the mere performance of the post mortem is simply a preliminary step in their solution. The book is clear, practical and comprehensive. Facts, not theories, are set down on its pages; facts that are made vivid and telling by the manner of their arrangement. But the chiefest service of the book, in our opinion, is that it so effectually shows how far-reaching and thorough must our investigations be if we are to learn aught of disease and death, and yet how much may be acquired in a few pages if these be lucid and concise.

THE DISEASES OF WOMEN: A Handbook for Students and Practitioners. By J. Bland Sutton, F. R. C. S., Eng., and Arthur E. Giles, M. D., B. Sc., Lond., F. R. C. S., Edin. One volume of 436 pages and 115 illustrations. W. B. Saunders, Philadelphia. $2.50 net.

This excellent book, with its logical arrangement, clear style and admirable illustrations, is intended for both students and practitioners of medicine. So many treatises upon gynecology have appeared within the past few years that one would think the demand had been amply satisfied. But the demand for good books is never satisfied; and we take pleasure in commending the volume before us as one built upon the ripe experience of two exceptionally able men, and replete with useful information. The book-maker deserves credit for the manner in which the volume is presented to the public; the illustrations are especially to be praised.

TRAUMATIC INJURIES OF THE BRAIN AND ITS MEMBRANES: With a Special Study of Pistol Shot Wounds of the Head in their Medico-Legal and Surgical Relations. By Charles Phelps, M. D., Surgeon to Bellevue and St. Vincent's Hospitals. In one handsome volume of 582 pages, with 49 illustrations. Cloth. D. Appleton & Co., New York.

This book will prove of great service to both physician and surgeon; and to those interested in medical jurisprudence it will be of incalculable value. The author is not embarrassed by his great wealth of material; he studies it exhaustively and arranges it clearly, concisely, and with great care and discrimination. The chapters on Pistol Shot Injuries are particularly instructive, and the series of experiments on cadavers, replete with interest. One of the strongest features of the book is the large number of photographic representations of cranial injury. The author, at the conclusion of labors of such magnitude and importance, must view with satisfaction a book so excellently representing the height of the modern publisher's skill.

This book may be secured in this city at Geo. N. Rider's, 437 Seventh Street.

A TEXT-BOOK OF DISEASES OF WOMEN. By Charles B. Penrose, M. D., Ph. D., Professor of Gynecology in the University of Pennsylvania, etc. Illustrated. Philadelphia: W. B. Saunders, 1897. 529 pages. Price, $3.50, net.

This book was written for the medical student and fulfills its purpose very satisfactorily. There is in it a wealth of illustration which serves admirably for the elucidation of the text. The author expresses his views clearly and concisely, yet with a fullness that leaves nothing to be desired. Facts of anatomy, physiology and pathology are left to the general text-books upon those subjects except where mention of such facts seems important for the purpose of explanation, or when there are certain points in pathology which are peculiar to the diseases under consideration. The subject of gynecology is so important even to the general practitioner, and it occupies so prominent a part in the curriculum of the schools at present, that a book of the high character of the one under consideration becomes invaluable to both the student and the physician.

TRANSACTIONS OF THE MICHIGAN STATE MEDICAL SOCIETY FOR THE YEAR 1897. Vol. XXI. Cloth, 524 pages. Grand Rapids, 1897.

This volume is replete with interesting papers and no less interesting discussions. A large variety of subjects is touched upon, covering the whole range of medical science. The volume is well worth perusal by all those who admire progressive medicine.

Therapeutic Notes.

THE WOODBRIDGE TREATMENT IN TYPHOID FEVER. A late number of the *Medical Record* contains an article on the Woodbridge abortive treatment of typhoid fever, based upon the reports of a number of cases in Bellevue Hospital, in each of which the diagnosis was confirmed by bacteriological examination. The patients suffered from typhoid fever beyond the peradventure of a doubt and were given only the Woodbridge treatment. In every instance the disease was shortened, there was an absence of delirium, the tongue remained moist, there was a rapid disappearance of abdominal tenderness and of tympanites and all offensive odor from the stools. Further information upon this subject will be promptly supplied by Parke, Davis & Co. The formulæ, as issued by this firm, are alone endorsed by Dr. Woodbridge.

CAN BE SEEN WITH ONE EYE. Carpenter tells us, in his work on The Microscope, that the compound eye of the dragon fly is composed of not less than 24,000 individual lenses, each a perfect eye. Thus equipped, it should be able to see the point of anything. Even with one eye it is easy to see what Just's Food will do, simply from looking at the illustrated Weight Charts. They are the indisputable testimony of the scales.

AN ANTIDOTE TO THE TWO GREAT SYMPTOMS.—The value of Antikamnia, according to *Medical Reprints*, London, England, consists in its rapid effect in alleviating the suffering of the patient while more radical treatment is working a cure. While endeavoring to rid our patient of his neuralgia, rheumatism, typhoid, intermittent or malarial fever, we secure him relief from pain and intermission of fever. Antikamnia is a most useful antidote to the two great symptoms—Pain and Pyrexia.

A POWERFUL REMEDY FOR SLEEPLESSNESS.—In the latest edition of his treatise on therapeutics, Prof. H. C. Wood ranks sulfonal next in efficiency to chloral, but as sulfonal is much superior to the latter on the score of safety, it will generally be preferred to that powerful yet insidiously dangerous drug. Sleep usually develops in from one half to one hour after the administration of sulfonal, and in most cases gradually though sometimes with abruptness. When the sleeplessness is due to pain, sulfonal is usually not serviceable. The great slowness or even failure of action of this drug has often depended on improper methods of administration.

PAPINE FOR THE RELIEF OF PAIN.—In *Gaillard's Medical Journal* for September, Dr. Theodore W. Peers, of Topeka, Kansas, has an article on Papine for the relief of pain. He reports two cases in which he used it with very gratifying results. In the first case, epithelioma of the left side of the face, he kept the patient comfortable with absolutely no unpleasant after-effects. In the other case, which was probably tubercular peritonitis, he used Papine for six months, with great relief to the patient.

THE ACTION OF PHYTOLINE IN OBESITY.—Prof. I. N. Love says the profession has long looked for some remedy which would diminish fat. In Phytoline (Walker) we have such a remedy. In a number of cases wherein Dr. Love has directed the using of Phytoline for the reduction of fat he has had favorable results. He believes it to be a perfectly safe and a harmless though a powerful anti-fat.

FOR CYSTITIS AND PROSTATIC TROUBLES.—Dr. J. F. Lambert, of Farley, Iowa, writes that he has prescribed Sanmetto in chronic cystitis where the standard remedies failed, and thus effected a permanent cure. He further says that it is ahead of anything he has ever used for all prostatic troubles. Sanmetto is likewise strongly recommended by J. Harvey Bledsoe, M. D., of Gold Hill, Ala., in backache from renal disease; by G. B. Fayne, M. D., in gonorrhœal inflammation; by Dr. Percy Newell, Crowborough, Eng., in post gonorrhœal gleet, and by Mrs. H. M. Robertson, M. D., in eneuresis nocturna.

WORTH KNOWING.—One of the most eminent physicians of Philadelphia says that he has had faithful trials made of Imperial Granum and can certify that it is a good, reliable substitute for mother's milk in the case of little babies afflicted with any digestive derangement. Another physician writes that he has in his only son a living example of the worth of Imperial Granum, and that he has prescribed it constantly for eleven years, with the best results. John Carle & Sons, 153 Water Street, N. Y., will furnish samples free to any physician.

A NEW REMEDY FOR TYPHOID FEVER.—At last we have a new remedy of native origin and manufacture. It is Guaiaquin, a compound of guaiacol and quinine. In this new preparation the virtues are retained and the drawbacks eliminated of the substances of which it is composed. It is an intestinal antiseptic, but when given by the mouth is not irritating, and interferes in no way with the process of digestion. It contains nearly 62 per cent of quinine, and yet may be administered hypodermically without pain or discomfort. Guaiaquin is therapeutically a most active agent: In exhaustive experiments in New York hospitals it has proved to be a remedy of exceptional value in the treatment of typhoid fever and other affections where intestinal antiseptics are indicated. Messrs. McKesson & Robbins, the discoverers and manufacturers of this new salt, will gladly furnish literature illustrating its utility.

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TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M. D.

MEETING OF APRIL 7, 1897. Dr. S. C. Busey, President, in the Chair.

A CONTRIBUTION TO THE STUDY AND CLASSIFICATION OF MALARIAL FEVERS IN THE DISTRICT OF COLUMBIA.

BY WILLIAM B. FRENCH, M. D.

On August 22, 1896, the Hygienic Laboratory of the Marine Hospital Service instituted a study of the character and origin of the malarial fevers in the District, with special reference to the prevalence of these fevers and the distribution of the various forms of infection, this work being preliminary to the study and classification of the several fevers incident to the southern portion of the United States.

The investigation was conducted mainly at the Washington Asylum Hospital, and two months later was continued at the Government Hospital for the Insane. The former is in the extreme eastern section of the city, on the banks of the Anacostia River, a branch of the Potomac, and not more than 15 or 20 feet above the surface of very extensive fresh water marshes; the last named institution is near the mouth of the Anacostia, about 200 feet above it and a quarter of a mile back from the river shore.

The Asylum Hospital obtains its water for all purposes from the city pipes, while the Hospital for the Insane is supplied with drinking water and that used for tea and coffee, from flowing springs that come from the same sand and gravel vein, about 40 feet below the surface of the plateau on which the hospital stands. There are several of these springs within an area of a mile, from two of which the main supply is taken. The analysis shows them all to be of remarkable purity and free from organic and albuminoid substances. "The main water supply for general purposes is obtained from tubular wells that draw their supply from a coarse gravel bed of unknown thickness, but more or less mixed with clay, at a depth of 300 to 400 feet below tide water. The drill to reach this passes through first about 30 feet of loam and sediment deposit of the river basin, then over 300 feet of clay, with two or three deposits of sand and gravel, but not yielding

sufficient water to be available for general use.

At night, as there is considerable consumption of water for water closets throughout the establishment, and also for steam heating and other mechanical purposes, and as it is not practicable to run the air lift for this, water is taken from the Potomac River. While, as the tank holds only 10,000 gallons, most of this river water runs away before morning, it doubtless now and then occurs that some remains and may be used for washing or drinking by the inmates in the morning. The tooth brush would also enter into the question to some extent as a carrier of malaria-bearing water.

The Washington Asylum water supply is free from local contamination at least, and would support the theory of aerial dissemination of the poison, but until we know to a certainty the life of the malarial organism outside of the human body, the question is likely to remain an unsettled one.

The origin of the malarial germ or organism is no doubt in the expanse of fresh-water marsh, close by, with its immense area of decomposing vegetable growth. There is no question about the quantity of malarial poison existing at the Asylum Hospital; its exact means of dissemination, however, is a matter for some speculation.

The character of the patients at the two institutions differs, in that at the Asylum Hospital they are generally transient, except those in the old men's home, while at St. Elizabeth they are more or less permanent, some having been residents as long as twenty years or more.

In some cases it could be fairly well determined that infection occurred after a brief stay at one or the other institution, but generally it was found almost impossible to secure reliable histories. At one institution the patients were ignorant and unobserving, and at the other they were insane in various degrees, so that objective symptoms alone had to be depended upon, or personal observation. For the same reasons it was found impracticable to sharply classify the several varieties of infection by means of their histories, nor could the percentage of infected cases to the total number of patients be determined, because the observer could not be present daily.

One hundred and five cases of known and suspected infection were examined, the ages of the patients ranging from one year to 87 years, and in 94 the organism was found. In six cases pigmented leucocytes only and free pigment were found, and in five cases the result was negative. About 20 additional cases were examined with negative results, but as the time of the examiner on some days was very limited, they have been excluded as not fair tests of the method.

A number of interesting conditions were seen in the blood, at times. Phagocytosis was not uncommon. A few segmenting forms were met with, but more often their pigment clumps were found free or in the leucocytes. In a few instances, two or three, and in one case four ring-like forms were seen in one red cell.

In all cases the blood was drawn from the lobe of the ear, and used in its fresh state.

As a matter of choice it is preferable to examine before the patient is cinchonized, but as the æstivo-autumnal organism was found once after 50 grains of quinine had been taken in 36 hours, preceded by 20 grains daily for two or three days, it is not necessary nor fair to withhold the drug pending an examination.

From the histories obtainable at the Washington Asylum, it seemed impossible to make any kind of a classification of cases by districts. Patients in many

instances have moved about from place to place within the city, and even away from it, and returned.

Without figures to support the statement, but from a somewhat extensive experience with the disease under consideration, it has appeared to the observer that the black man is quite as susceptible to infection as the white, but the negro, owing to his lower state of civilization, bears the hardships of sickness with less complaint than his white neighbors, and for that reason may appear to suffer less under similar conditions.

The total number of cases were distributed as follows :

At the Washington Asylum, tertian infections	21
At the Washington Asylum, æstivo-autumnal	34
At the Washington Asylum, combined infections	3
Government Hospital for the Insane, tertian infections	20
Government Hospital for the Insane, æstivo-autumnal	16
	94

It should be stated in connection with these figures that they do not include all cases of malarial infection, because the work was not carried on daily, nor during the entire twenty-four hours of any one day. Occasionally the observations were suspended for several days at a time.

Seventy white and twenty-four colored people were found infected, divided as follows :

White, æstivo-autumnal	34
Colored, æstivo-autumnal	16
White, tertian	34
Colored, tertian	7
Double infection, white	1
Double infection, colored	2

The ages of the patients examined were :

1 year old	1
2 " "	1
10 to 15 yrs	2
15 to 20 yrs	5
20 to 30 yrs	7
30 to 40 yrs	22
40 to 50 yrs	11
50 to 60 yrs	16
60 to 70 yrs	17
70 to 80 yrs	8
80 to 87 yrs	4
	94

A study of this table, where the extremes of life are represented, (a baby of one year and five men of 80 to 87 years), would seem to show that no age is exempt from the disease in question. The observer's experience in the preceding year bears out this statement fully, especially as to children and babies. Many cases of infection in nursing infants were found in a series of dispensary cases examined a year or more ago, and one instance of a combined infection with a semi-comatose state, in addition to the one reported in this series.

Mixed Infections.

It is desired to call special attention to the two cases of pulmonary tuberculosis, complicated by the presence of malarial infection. In quite a large number of blood examinations, these are the first two cases of the kind that the observer has met. In the 600 and more cases studied by Drs. Thayer and Hewetson, of the Johns Hopkins Hospital, malarial infection of tuberculous patients is not mentioned. It is readily seen how confusing to the physician and how troublesome to the patients such a condition of affairs would be, and that in all probability the tuberculosis would be suspected, for a time, at least, as the

cause of the chills and fever. The diagnosis in such cases would have, too, a very material bearing on treatment—in one case, quinine and plenty of it; in the other, the remedies thought best for the condition of the lungs would be indicated.

The blood showed crescents and free pigment blocks in one, and ring-like bodies in the other. Tubercle bacilli were found in the sputum of each. It would have been very instructive to have followed out the effect of the malarial complication of tuberculosis, but in the absence of detailed temperature charts and histories, it could not be done.

The combined infections, of which there were three, deserve mention. In two the symptoms were clearly those of the tertian organism, which largely predominated; in another, a baby of 22 months, the first infection was with the tertian parasite. Quinine was given and the symptoms disappeared for about two weeks, when they returned, and quinine was again given with good results. About three weeks later the child was seized with convulsions, and on the following day its blood showed flagellate bodies, a great number of half-grown tertians and large extra-cellular bodies, some in process of budding, and fourteen crescents and one ring-like form, in a small cover-slip preparation. Quinine was given and the next day the various forms were less numerous. Under further treatment the baby had had no return of trouble eight days later, when the work closed at the Asylum Hospital. As showing the possibilities in diagnosis, it was suggested that the baby "had worms" when the convulsion occurred, but a glance at the blood was convincing.

Another case of some interest was that of a white man of 69 years, a carpenter, a native of the southeast part of this city, whose previous health, he said, had been good. Three weeks prior to the occasion about to be related he entered the hospital for treatment of a diarrhœa of a year's standing, and was discharged cured after a short stay in the hospital, but promptly returned with the same trouble, and a week later the note of the case reads: "Has had Quin. Sulph., grs. v, t. i. d. for six days. No chills No temperatures taken. Very sallow and anæmic; emaciated and seems in much general distress." A blood examination was suggested by the general appearance of the patient, and showed numerous pigmented leucocytes, crescents, ovoids, intracellular ring-like forms, flagellate bodies, frequent instances of two ring-like forms in one corpuscle and phagocytosis of flagellate body in active motion. Death occurred ten hours after the examination mentioned, and the autopsy showed "heart small and almost enveloped in fat. Lungs pigmented but normal. Liver normal in size and appearance. Spleen small, soft and friable. Kidneys normal in size and general appearance, except for several small superficial watery cysts on surface of one of them." It was not practicable to examine the brain. A few hours before death the rectal temperature was 95.6, pulse 84 and small and weak. This was undoubtedly a death from malarial poisoning, a rather more rare occurrence than generally supposed, in this regionat least.

Perhaps a majority of the cases studied would have been readily recognized as malarial, but in the doubtful cases the diagnosis was dependent upon the blood examination. This was particularly true of the baby in convulsions from a combined infection, æstivo-autumnal and tertian; of the two cases of tuberculosis, where the former type of infection was found, and in the case of the man of 69 years, just mentioned.

It is safe to say that a positive diagnosis can be made in 95 per cent of cases without the expenditure of undue time. The satisfaction of feeling sure of your case is well worth the labor required.

No cases of quartan infection were discovered, nor were there any cases of combined malaria and typhoid.

DISCUSSION.

DR. REED: The determination of the types of malarial diseases occurring in the District of Columbia is certainly of interest and importance. With that idea in mind, shortly after my assignment to duty here in 1893, I made several visits to the garrison at the foot of Four-and-a-half Street and found the parasites of tertian and of æstivo-autumnal fever. In 1895 I received orders to investigate the causation of the malarial fevers occurring at Washington Barracks and at Fort Myer. With the assistance of Drs. Gray and Carroll I managed to study thirty-five (35) cases. Of the nineteen (19) cases examined at Washington Barracks, the parasite of æstivo-autumnal fever was found in 14, and the tertian parasite in 5 cases. At Fort Myer sixteen (16) cases were studied, and of these the æstivo-autumnal parasite was found in only one case, while there were fifteen cases of the tertian form. In the report which I made, published in the annual report of the Surgeon General for 1896, I made no deduction from the fact that so few cases of the æstivo-autumnal fever were found at Fort Myer. My own investigations agree, therefore, with Dr. French's as to the types of malarial diseases that prevail in the District of Columbia, and also agree with the findings made in Baltimore at the Johns Hopkins Hospital. There, in six hundred and sixty-six cases of malaria, the quartan parasite was observed only three times, so that this form may be considered as rare in this latitude. In this connection I will pass around diagrams obtained from the records of 26 years at Fort Myer, Washington Barracks and Providence Hospital, respectively. From this you will see how the annual malarial curve runs in the District of Columbia; how it slowly rises in the month of July, and ascends higher in August and reaches its highest point in September, and then drops down in October. I regret that Dr. French did not inquire more into the causation of malaria at the Washington Asylum and St. Elizabeth's. He seems to think that the surroundings are sufficient to account for the disease in the former place, and that the drinking water is not responsible; but at St. Elizabeth's, he fears that the patients may drink the river water pumped up from the flats near the Asylum, and he knows that they do bathe in it and dip their tooth brushes in it.

The water-borne theory of malaria has taken hold of the profession to such an extent that we may now speak of *mal-aqua* versus *malaria*. I would, however, call attention to the fact that those of the city's inhabitants most subject to malarial fevers live along the water front and in the adjacent sections of the city, while those inhabitants living in the higher portions are not subject to malaria to any extent. Yet all drink Potomac River water. For instance, at Washington Barracks they are very subject to the disease, while the citizens of the city, who are drinking the same Potomac water, are not subject to it.

When we think of the fact that the Italian observers have administered water from the Pontine marshes to their patients, and have repeatedly caused them to drink the dew from the grass in marshy places and blood of malarial patients without developing malaria in any case, it throws some doubt upon the correctness of the water-borne theory. Certainly, if malarial disease could not be produced in this way, it does not seem fair to think that bathing in Potomac River water will cause malarial fever among the patients at St. Elizabeth's.

Dr. French says further, as a result of his investigations, that the negro race is just as susceptible to malarial fever as the white man.

I will give a few statistics showing the difference in the immunity to malarial fever between the white race and the colored race, as given by Dr. Philippo Rho, of the Italian navy. In Jamaica the mortality per thousand among the white was 101; among the negroes 8;

in Guiana, 59 per thousand for the whites; 8 for the negroes; in Trinidad, 61 white and 3 negroes; in Ceylon, 24 white, 1 negro; Sierra Leone, 40 white, 2 negroes. In this connection I may say that certainly the general experience of the medical profession would indicate that the negro is more immune. Fort Myer is a mixed garrison. There the white and negro soldiers are of the same age and physique, and are living under the same conditions. My observation extends over a period of four years.

1891, whites 92 cases per thousand of mean strength; negroes 51 per thousand.

1892, whites 545 cases per thousand of mean strength; negroes 223 per thousand.

1893, whites 732 cases per thousand of mean strength; negroes 372 per thousand.

1894, whites 711 cases per thousand of mean strength; negroes 291 per thousand.

The fact noted by Dr. French that there may be an entire absence of the parasite, is in agreement with that of other observers. Mannaberg reports three cases of æstivo-autumnal fever out of 133 in which the parasite was not found, and Bacelli calls attention to the fact that the disease may go on to a fatal termination without the parasite being found. A physician may examine the blood at the time that segmentation is taking place in the internal organs, and this may be the explanation of why the parasite is not found. In a few cases in which the patients have died without the parasite being found in the blood it has been found afterwards in large numbers in the spleen and liver.

Dr. French has reported an interesting fact in regard to the discovery of the parasite of malaria associated with tuberculosis. I do not think that his cases are altogether unique, though it is true that Thayer and Hewetson did not report any such case. A few years ago it was believed that there was an antagonism between malaria and tuberculosis. Not only is that belief now exploded, but it is thought that where malaria is found associated with tuberculosis, the latter disease runs a more rapidly fatal course.

Dr. Rupert Norton: As regards the age of the patient, malaria may be found at any period from the time he is born to the time he dies. Holt reports a case of malaria in a child a day and a half after birth with rise of temperature and chills which were controlled by quinine. The mother, before the birth of the child, suffered from typical attacks of tertian fever, but how the child could get the fever from the mother is beyond understanding, since he does not get his blood from the mother.

I agree with Dr. Reed, that the number of colored patients who are subject to malaria is much less than the whites. In Washington the colored people live along the water front in greater proportions than the whites, and as almost all the malaria comes from that part of the city, it appears as though the blacks were more affected than the whites.

Dr. French found only the tertian and æstivo-autumnal forms. As Dr. Reed says, the quartan form is very rare in this latitude. I have never seen a case of it here. More cases of the æstivo-autumnal variety will be found in the fall, while the tertian form occurs more frequently in the spring months. Of course, the quotidian fevers are ordinarily nothing but examples of double tertian infection, giving rise to fevers every day. Calling these types of organism intermittent, remittent, etc., is very misleading. The æstivo-autumnal fever is not only intermittent, but also remittent. To say that so many cases die of intermittent fever and so many of remittent fever means nothing, and should be eliminated from the mortality records. I think that quinine should be given as soon as we can get a combination of symptoms pointing to malaria. Quinine will be found to have very much less effect on the æstivo-autumnal parasite and on the crescentic forms than on the tertian variety. The former will be found very active while quinine is being given, but nevertheless the drug should be persisted with.

I do not believe in the water-borne theory. There is no evidence that the disease has ever come from drinking water.

The latest theory of the spread of malaria is that started by Manson of India. His idea is that it is due to the bites of mosquitoes.

There are many curious things about malaria. For instance, a person is especially liable to become infected by going out in the evening. They do not acquire it in the daytime. Again, if we can avoid the bites of insects we will avoid the disease. In parts of Italy the people build their houses so that no insects can get in. Theobald Smith has proved that Texas fever is directly transmitted to animals by insects, and Hutchinson reports a case of syphilis due to a flea bite.

Dr. Robert Reyburn: There is one point on which I want to take issue with Dr. Reed. That is with regard to the relative frequency of malarial fever in the negro and the white man. A few years ago I reported a series of 452,719 cases of malarial fever showing the number of white men and negroes with the disease. The colored man is not exempt from malaria, but a large proportion, sometimes 27 per cent, had malarial fever. I also examined the relative frequency of malarial fever in 23,000 white refugees. Comparing my statistics with those kept of the colored troops during the war I find that the ratio is about the same. The colored people in this country are not exempt nor immune from malarial fever.

Dr. Kober: May I ask Dr. Reyburn whether these observations apply to the pure negro race or to a mixed race. Does he believe that malaria is common among the pure African type?

Dr. Reyburn: These statistics refer to the mixed race. It is impossible to separate them. I do not know whether the pure African race is exempt, but certainly the mixed race is not. A pure-blooded African is a great rarity in this part of the country. In the Southern States you may, perhaps, find them occasionally, but here they are very rare.

Dr. Kober: Dr. Reed's foreign statistics refer to pure races.

Dr. Reyburn: I would like to add that the great mortality from malarial fever among white men in tropical climates is not on account of the greater susceptibility of the whites, but to their manner of living. They take their old customs with them, and live in a manner entirely out of place in the climate in which they find themselves. If they lived as the natives of the country did they would escape the disease.

Dr. William B. French, in closing the discussion, said: There appears to be some misapprehension regarding the possible contamination of the water supply at St. Elizabeth's which I would like to clear up. Of the 200,000 gallons used daily, only 10,000 gallons are pumped from the flats into the tank referred to by Dr. Reed, and those 10,000 gallons are intended to be used only during the night for closets, etc. The same tank is used in the morning for artesian water and may contain some of the river water left over from the night's consumption as stated before, thus affording a possible source of contamination.

The question of the susceptibility of the negro seems to be settled.

Dr. Kober: May I ask whether these negroes to which Dr. French refers were of the pure type?

Dr. French: As Dr. Reyburn said, the pure negro is a rare specimen. All those that I have seen were more or less mixed.

MEETING OF APRIL 14, 1897.

Dr. S. C. Busey, President, in the chair.

The Board of Censors having reported that Drs. Thomas Miller, Francis Lieber, George W. Wood, John D. Thomas, William L. Masterson, H. C. Duffey, Edwin M. Hasbrouck, George T. Howland, V. B. Jackson, F. R. Hagner, Robert F. Mason, N. P. Barnes and C. L. Allen were eligible for membership, on a vote being taken they were declared elected to membership in the Society.

Hydatidiform Mole.

Dr. D. S. Lamb presented for Dr. R. T. Holden a specimen of Hydatidiform Mole. The mother, a white woman, age 24, married 2½ years, was at third and a half month of first pregnancy. At

severe. Urine quite albuminous; marked œdema of lower limbs with anæmia. sixth week of pregnancy had nausea and vomiting which speedily became more On April 8 she had profuse hemorrhage from vagina, followed in two hours by severe expulsive pains. Five hours afterwards the uterus was large and firm and the os uteri slightly dilated. Seven hours afterwards the dilatation permitted introduction of finger, when this mass was found and removed in separate portions. The woman is doing well.

DISCUSSION.

Dr. T. C. Smith said: September 23, 1887, I recounted before this Society two cases of Hydatidiform Mole, and presented the specimens. In the first case a quart of hydatidiform bodies was removed from the uterus. In the other case a half gallon was obtained. In one case the lady was not quite four months advanced. In the second the patient had nearly reached full term. In neither case was the fetus found. In the first there were no symptoms previous to the hemorrhage and pain which occurred on the morning of the day I was called. In the other case there had been repeated discharges of blood, but no grape-like bodies passed until last attack.

The period of gestation, when these bodies form, is before the end of the third month, for at that time the placenta is formed, and the villi at its site become vascular, while those over other parts of the fetal sac undergo atrophy. The cause of hydatidiform degeneration is generally believed to be disease of the chorion. While the disease generally causes the death of the fetus, it is known that a living child may be born at term, notwithstanding the existence of the disease.

The character of a wife may be smirched by the escape of one of these moles, if the fact is not borne in mind that they may be retained within the uterus for a lengthy period.

DISCUSSION OF DR. KERR'S CASE.

Dr. George W. Johnston: The urine of this patient was examined by Dr. Gray some time ago, who found therein certain cells which he regarded as suggestive of cancer. Other specimens were examined by Dr. Van Rensselaer with a like result. A correct diagnosis had been made of malignant disease of the kidney by Dr. W. W. Johnston before the case was brought to our attention.

My interest in the case centers upon the fact that Dr. Stewart and myself investigated, on February 23, several blood clots, which had been passed in the urine, and on March 4 a specimen of urine from this patient. We expressed the opinion in our report that the case was one of malignant tumor of the kidney. What I wish to speak of particularly to-night is the value of blood examinations in cases of suspected malignant disease and to show that in this case, independently of the clinical history and of the examination of the urine and clots, a correct diagnosis was suggested by this means alone. After entering upon a minute description of the cell elements of the blood, Dr. Johnston said:

The patient's blood was examined early on the morning of March 4, 15 hours after she had taken nourishment, and the report, which was prepared in our clinical laboratory, was submitted next day to the attending physician, Dr. W. W. Johnston.

"No food taken since the previous evening—6 o'clock.

"1. Blood drop—thin and pale; clotted slowly.

"2. Hæmoglobin—58.20 per cent.

"3. Count of red-blood corpuscles—4,492,000 per cb. mm.

"4. Color index—amount of hæmoglobin per corpuscle — 0.65.

"5. Count of leucocytes—18,908 per cb. mm.

"6. Proportion of leucocytes to red-blood corpuscles—1:237.

"7. Differential count of leucocytes:

"a. Small mononuclear—7 per cent. Normal, 15'—30 per cent.

"b. Large mononuclear—4.7 per cent. Normal—6 per cent.

"c. Transitional—2.5 per cent. Normal—2 per cent.

"d. Polymorphonuclear--84.24 per cent. Normal, 60—80 per cent.

"e. Eosinophiles—1.17 per cent. Normal, 2—5 per cent.

"f. Myelocytes—0.39 per cent. Normal—0 per cent.

"8. Qualitative changes:

"a. Pallor of centers of reds.

"b. Considerable variation in average diameter.

"c. Deformities in shape.

"9. Diagnosis and remarks:

"The following diseases may have been thought of as more or less closely associated with the origin of the periodical hemorrhages in this case:

"1. Gout; 2. Uric acid diathesis, associated with renal calculus; 3. Nephritis; 4. Tubercular disease of kidney; 5. Cancer."

What strikes one immediately is that the total number of leucocytes is high, nearly 19,000 per cb. mm.; the number of the small mononuclears low, one-half the minimal normal number, and the number of polymorphonuclear cells higher than would be found in a person of very vigorous constitution and robust health.

"1. In gout, the blood is normal.

"2. In the uric acid diathesis, the blood has not been carefully studied, but it has been found that the excretion of uric acid and the leucocyte count increase or decrease in direct proportion to each other. With the large number of leucocytes here present a large excretion of uric acid would, therefore, be expected. A quantitative examination of the urine could be made for determining the amount of uric acid present, but that there is not a very large excess is probable from the almost complete absence of uric acid in the sediment of the specimen examined February 23 and its entire absence in the specimen of March 4. The presence or absence of Neusser's perinuclear granules I hardly regard as conclusive in determining the existence of either gout or rheumatism.

"3. In chronic interstitial nephritis the blood is normal as long as the circulation is not much disturbed.

"4. In tuberculosis of the kidney there is no increase of leucocytes until secondary infection occurs. In four cases reported, where this had taken place, the highest leucocyte count was 4,456 per cb. mm. lower than in the present case.

"5. Malignant disease.

"Comparing first the conditions found in malignant disease in general with those existing in the case under consideration, it will be seen that the similarity is quite striking. There is but slight diminution in the number of red-blood corpuscles in all but advanced cases of cancer. In the present case there were

4,492,000 per cb. mm. The normal for a woman of her age and physique would be about 4,500,000. It should be remembered, however, that in this case the count was made after a fast of fifteen hours, and consequently at a time when the blood was most highly concentrated, and the number of reds per cb. mm. the greatest.

"In 48 cases of carcinomatous disease in the Massachusetts General Hospital, the blood was examined. The mean number of reds per cb. mm. was 4,140,000 (our case, 4,492,000), the mean percentage of hæmoglobin 54 per cent (our case, 58.20 per cent), and the color index 0.65 (our case, 0.65).

"The number of leucocytes present in this case in each cb. mm. of blood was 18,908 and the ratio to the number of red corpuscles is 1:237. There is then a leucocytosis which is not physiological, for digestion and the other causes of physiological leucocytosis could all be excluded. Of the pathological causes hemorrhage in sufficient amount to be of importance had not occurred, and there was neither inflammation, toxemia, nor any other morbid factor present. If further proof were necessary that this is not a physiological leucocytosis, it may be obtained by comparing the number of each kind of leucocyte present with the normal. It will be seen at once that the increase of leucocytes is not 'all along the line,' as in physiological leucocytosis, but is due mainly to an increase in the neutrophiles or adult cells. Seventy per cent of adult cells for this individual would be very high, and, therefore, over 84 per cent is distinctly pathological. In debility from certain diseases, it is the young cells that are increased, the adult cells being relatively diminished. In carcinoma it is the reverse. In the present case the adult leucocyte count is considerably higher than would be met with in a vigorous athlete, while the youngest cells are but half the minimum normal percentage. In our case, as has been mentioned, there was 84.24 per cent adult cells. The average of eight cases of cancer, reported by Reinbach, was 84 per cent. Other observations showed great similarity. That this and other blood conditions associated with cancer are not due to peculiarities of the individual, but to the cancer, is shown by the return to the normal after operation. In the cases of cancer at the Massachusetts General Hospital, the eosinophiles, or old cells, formed 1.20 per cent of all the leucocytes present; in our case, 1.17 per cent.

"Comparing the five reported cases of cancer of the kidney with our case, we find that the lowest leucocyte count was 18,541 (our case, 18,908), and the number gradually increased with the advance of the disease and the development of metastases. In these five cases the average number of reds was 4,801,750 (our case, 4,492,000); the average per cent of adult leucocytes was 84.68 per cent (our case, 84.24 per cent); the average number of small mononuclears was 9.10 per cent. (our case, 7.0 per cent), and the average per cent of eosinophiles was 1.10 per cent (our case 1.17 per cent).

In conclusion it may be said, that the findings in this case are strikingly like those of malignant disease in general, correspond almost exactly with the conditions found in the only cases of cancer of the kidney reported, and are absolutely different from those associated with any other disease of the kidney in which hemorrhage is a symptom."

I have not seen the record of a case of sarcoma of the kidney where the blood has been examined, but the similarity of this case and the cases of carcinoma of the kidney reported is striking. As re-

gards the number of leucocytes in malignant disease, the degree of leucocytosis is at first relatively low, but gradually increases with the progress of the disease. With a hard, slow-growing cancer the degree of leucocytosis is not very great, but in the fulminating form it is very great. The number of leucocytes also increases with metastasis.

I have found since making the above remarks notes of two cases of sarcoma of the kidney, which are recorded by Cabot. In case 1, there were 2,706,000 reds and 56,000 whites. In case 2, there were 4,352,000 reds and 13,600 whites.

Dr. J. Wesley Bovee said he would like to ask Dr. Kerr why he did the trans-peritoneal nephrectomy in preference to the extra-peritoneal operation, which gives better opportunities for the removal of the ureter than the trans-peritoneal method, and I think it a much quicker operation. Another advantage in the extra-peritoneal route is that it causes the patient less shock, and by this method you can follow the ureter low down in the pelvis and cut it off short. In cases of malignant disease I generally consider it inadvisable to run the risk of dropping any portion of it into the peritoneal cavity.

In conditions tempting us to remove the kidney, where the function of the organ is good, we should be careful about doing so. But when the disease has progressed, and the function has been lost, as in Dr. Kerr's case, and the other kidney is compensating for the loss, then the removal of the diseased organ does not throw so much additional work upon the other organ.

Dr. James Kerr, in reply to Dr. Bovee, said: My reason for choosing the trans-peritoneal operation was because the patient was not in good condition for a prolonged operation, and because I considered this operation quicker than the other, and because the operation was partly exploratory in character.

PREDISPOSITION AND IMMUNITY.

Dr. Kober read a paper with the above title. He first took up the subject of temperaments and idiosyncrasies, and their bearing in the prevention and treatment of disease. He next considered the question of predisposition in non-specific and infectious diseases, and pointed out that certain diseases can only result when the avenues for the invasion of pathogenic organisms are open and the system offers a suitable soil for their proliferation. Special attention was given to the various factors calculated to influence infection, such as functional derangements of the stomach and alteration of the gastric juice, the activity and power of resistance of the cells, particularly of the the leucocytes and the condition of the blood; he referred to Wyssokowitch's experiments, which have shown that the same bacterial organisms which were rapidily destroyed under normal conditions of the blood, at once began to proliferate when the animal was placed under the influence of a ptomaine, and argued that if healthy blood offered a natural defense, impure blood would constitute a prominent predisposing factor. He next pointed out the various causes of impure blood, such as suppression of one or more emunctories of the body, bad food, impure air and water, over-eating, over-work, excessive generation of effete matter within the body, intemperance, deficient exercise, and the manner in which the presence of an excess of effete matter, *i. e.*, nitrogenous matter in a decomposing or readily decomposable state in the blood, might offer the best possible food for disease germs.

He next considered the influence of malnutrition, and of fear, worry and anxiety, in lessening the power of resistance of the cells in their struggle with

disease germs. Reference was made to acquired and hereditary predisposition and the various theories which have been invoked to explain heredity and hereditary predisposition. The author believes, that in the constitutional states or so-called diatheses which abnormal habits of life tend to induce, the impression is gradually made upon the cell elements of the body, and when once firmly rooted a change in the cell results, which is reproduced in succeeding cells and transmitted to the progeny, and that it is no more difficult to account for inherited vulnerable anatomical elements to certain morbific agents, than to explain the hereditary transmission of physical and mental characteristics and the many idiosyncrasies to drugs; he emphasized the practical importance of the subject, and said: "If we recognize an hereditary predisposition to disease we will of course recommend such measures as may prevent the manifestations of the threatened disorder; and as hereditary predisposition generally manifests itself whenever some deficient condition has been supplied, it is quite possible that it may be broken up by the introduction of normal factors; thus for example the liability to gout may certainly be lessened by proper diet, attention to the skin and bodily exercise; while the predisposition to tuberculosis may be arrested by proper food, fresh air, sunlight, exercise, and such other factors as may increase the power of resistance of the system."

He then discussed the subject of immunity, and referred to the immunity of the negro race from certain diseases like malaria, yellow fever, diphtheria, trachoma, etc. Livingstone, he said, as early as 1858 called attention to the fact, that the natives of southwestern Africa recover from all venereal diseases without any treatment whatever, and that it appears impossible to perpetuate syphilis among them; the only explanation the author could offer is, that the disease was so common among their forefathers that a certain amount of tolerance to the virus has been acquired and transmitted from one generation to another.

In speaking of the subject of acquired and artificial immunity, the writer says: "Infectious diseases do not exist merely because some noxious micro-organisms have taken their abode in the system, for this takes place often enough, but they exist because functional and structural changes have been brought about through the agency of the toxines, evolved by these organisms.

"It seems, therefore, that in these cases of immunity we are dealing with a question of tolerance which has been established in the cells and nowhere else. The cells having been exposed to the influence of these poisons, are changed in their molecular structure, and when thus changed their structural and physiological peculiarities are reproduced in succeeding cells; in brief, these forms of immunity are due to the inaptitude of the cells to feel the effects of the same toxines evolved by subsequent microbial invaders.

"We see the evidences of acquired tolerance almost daily in persons who have become the victims of enslaving drugs taken in sufficient dosage to kill a dozen other men, and we see this tolerance in the form of hereditary immunity transmitted in succeeding generations; and how? Simply through the agency of the parent cell."

He believes, however, that many persons apparently immune may have had the disease in a very mild form, so mild in fact, as to escape attention; we recognize mild, medium and severe types of scarlet fever, diphtheria, measles, etc., and there may be still milder types, differing in degree, but not in kind.

But this explanation, he said, is not applicable to all infectious diseases, for there are a number of diseases in which one attack affords no immunity from a subsequent attack; in fact, the susceptibility is rather increased, as in malaria, gonorrhœa, croupous pneumonia, septic infections and erysipelas; nor are the subsequent attacks, except perhaps in erysipelas, of a milder type. He was not prepared to offer a satisfactory explanation for this increased vulnerability, for even if we are dealing with the establishment of a locus minoris resistentiæ in gonorrhœa and pneumonia, this could scarcely be said of malaria.

Since the system possesses defensive forces against microbial invaders, the question of numbers is not without importance in the subject of predisposition and immunity. While the potency of the germs of glanders, tetanus, septic and puerperal fever is very great and the anthrax bacilli may even be inoculated by the sting of insects, implying a very limited number, inoculation experiments of which vaccination is the most familiar example, teach us that certain concentrations are necessary for success.

DISCUSSION.

Dr. Frank Baker: I should have been very glad to have Dr. Kober extend his remarks into the field of cells in general, for many of the most important results in regard to the nature of cells have been derived from a study of cells simpler even than animal cells—vegetable cells. As an example of how the introduction of foreign elements may change the nature of these cells, or how an irritant may produce results in these cells, we have only to go to the gall nut of the oak. Here we have a vegetable organism stung by a small fly which has a little irritant poison in its ovipositor. The organism then goes to work to build an extraneous structure foreign to its nature, and having a totally different structure from the oak itself, and yet thoroughly organized. This result is produced simply by the irritant. These galls, though differing from the oak, can, under skillful management, be made to grow into oak trees. There are numbers of other instances similar to this which can be found throughout the animal and vegetable kingdoms. It seems to me, therefore, that Dr. Kober's contention is a thoroughly sound one.

There are two causes involved in this subject; first, that in which cells act as a whole, and second, when the action involves the separate elements of the cell, is, in fact, intracellular. When nervous depression weakens the entire organism and renders it more susceptible to attack, I think we can assign it to the first of these causes. We know, for example, that a nervous cell is not a mere truncated cell body, but an organism that stretches out its processes to a very great length. There are many of them that stretch from the cortex of the brain down into the spinal cord and by the vibrations of the fibrillary terminations impart impulses. These terminations have been seen in actual motion. It seems quite probable that during mental depression such filaments may withdraw from each other and cause a cessation of the impulses.

In considering the second class of cases we must take into account the intimate structure of the cell. We now know that the cell of even the simplest living forms possesses a very complex structure. Under the microscope the protoplasmic mass is found to be composed of a highly complicated reticulum varying in different kinds of cells and in different parts of the same cell, and built up in some parts into definite structures or organs. The physiological behavior of these structures leads us to another series of considerations that, while necessarily theoretical, since they deal with entities beyond the ken of microscopic vision,

should neverthelsss receive due weight. As Dalton conceived the physical universe to be composed of infinitesimal units called atoms, which impart to matter its special chemical properties, and that these are aggregated into groups termed molecules, which impart the physical characters, so biologists assume that in protoplasm we are dealing with still higher systemic aggregations composed of molecules acting in combinations under definite laws. These systems have received different names from different authors, the most satisfactory being, perhaps, that of Weismann, who calls them *biophores*, the bearers of life. Like the atoms and molecules of Dalton, these, too, are supposed to be in active motion along definitely circumscribed paths.

Now, it is certainly conceivable that by interfering either with the constitution or the paths of the biophores we may induce definite biotic changes like the analogous chemical and physical changes produced by interfering with atoms and molecules. As a minute quantity of a substance may induce crystallization throughout a large mass, so a minute quantity of a toxine may induce such biotic changes in the cells as to render them forever afterwards incapable of being affected by other material of the same sort. This is immunity, and is similar but not identical with the effect of the poison of the gall fly on the oak.

NOTE.

The editing Committee of the Medical Society of the District of Columbia desires to state, that, owing to the loss of the Secretary's MS., the remarks made by Dr. S. C. Busey on the evening of April 28, upon the "Influences of School Life that Affect the Health of Children," were incorrectly reported in the October number of this journal. The Committee regrets this unfortunate occurrence, and will make every effort to find the missing MS. and rectify the error.

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Original Articles.

THE ETIOLOGY OF CROUPOUS PNEUMONIA.

BY GEO. M. STERNBERG, M. D., L. L. D.,
Surgeon General, U. S. Army.

The micrococcus discovered by the present writer in 1880, and subsequently named *Micrococcus Pasteuri*, is now generally accepted by pathologists as the specific infectious agent in croupous pneumonia, and in recognition of this fact I have described it in my Manual of Bacteriology under the name *Micrococcus pneumoniæ crouposæ*. I object to the name "diplococcus pneumoniæ" because this micrococcus in certain culture media forms longer or shorter chains and it is in fact a streptococcus. I object to the name "micrococcus lanceolatus" because the lancet shape is not a constant character and is not usually seen in the micrococcus as it occurs in various culture media or even in the sputum of patients with pneumonia, and in the blood of inoculated rabbits—See photomicrographs in my Text Book of Bacteriology by Fränkel and by Gray (Plate VI, Figs. 4. and 6). To speak of this micrococcus as "Fränkel's pneumococcus" is an injustice to myself as the discoverer and to several investigators who had an important share in the demonstration of its specific relation to the localized infectious process known to us as croupous pneumonia—Talamon, Salvioli, Weichselbaum, Gameléia Netter, and others.

This micrococcus is commonly spoken of as the *usual* cause of croupous pneumonia, but some pathologists believe it to be the sole cause of this particular form of pulmonary imflammation. It is true that its presence has not always been demonstrated even in researches made by very competent bacteriologists, and in a certain proportion of the cases other bacteria are obtained from the pneumonic exudate obtained with proper precautions at autopsies. The failure to find the specific infectious agent in cultures from certain fatal cases is probably due to the fact that it very quickly perishes when the conditions are not favorable for its continued multiplication. And, no doubt, Friedlander's bacillus and other saprophytes which have been obtained under such circumstances were present not as the cause of the infectious process, but because the exudate produced by the action of the specific infectious agent afforded a favorable nidus for their development. While some of the earlier investigators only found this micrococcus in a certain proportion of the cases examined, its con-

stant presence has been reported by others whose investigations are more recent. Weichselbaum (1888) found it in 94 out of 129 cases examined; Wolf (1887) in 66 out of 70 cases examined; Gameléia in a series of 12 fatal cases; Goldenberg (1887) in 40 consecutive cases; Netter (1892) in 66 cases examined by him since the year 1886 has uniformly found this micrococcus, which he regards as the sole cause of this form of pneumonia. On the other hand, Netter finds that broncho-pneumonia may be due to various pathogenic bacteria, although a majority of the cases are due to the presence of this micrococcus. In 53 cases of broncho-pneumonia in adults micrococcus pneumonia croupосae was found alone in 15; streptococcus pyogenes in 12; Friedlander's bacillus in 9; pyogenic staphylococci in 3, and 14 were due to a mixed infection in which two or more of these pathogenic microorganisms were associated.

Recent researches show that during or after an attack of pneumonia this micrococcus is sometimes and perhaps usually present in the blood in small numbers. This is shown by the secondary infectious processes which sometimes follow an attack of pneumonia, and in which the presense of the micrococcus has been demonstrated—*e. g.*, endocarditis, parotitis, arthritis. Also by the direct examination of the blood and by inoculations of blood from one of the cavities of the heart into rabbits (Casati, 1893).

It is hardly necessary to say that in pneumonia as in other infectious diseases, other factors besides the presence of the specific infectious agent play an important part in the etiology of the disease. The most important predisposing causes are such devitalizing agencies as chronic alcoholism, crowd-poisoning, over-work, insufficient food, etc. The usual exciting cause is the pulmonary congestion which results from exposure to cold or from some other infectious disease of the respiratory passages—especially measles, influenza, and bronchitis. The seasonal prevalence of pneumonia is thus explained in a rational way and does not at all conflict with the view that it is due to the pathogenic action of a specific microorganism. Moreover, the fact that this pathogenic micrococcus is widely distributed and apparently finds its normal habitat in the buccal secretions of healthy individuals, accounts for the sporadic occurrence of cases of pneumonia and for the fact that a majority of the cases cannot be traced to infection from preceding cases. The development of an attack may be compared, as regards its etiology, to the development of a carbuncle at the back of the neck in a stout, elderly, alcoholic subject. In this case the depressing effects of chronic alcoholism and the low vitality of the tissues constitute a predisposing cause; pressure upon the back of the neck while sitting in a chair is probably the usual exciting cause—*i. e.*, the bruising of the tissues lowers their normal resisting power to infection. The pyogenic cocci, which are widely distributed and are commonly found upon the surface of the bodies of healthy persons, thus find conditions which enable them to overcome the vital resistance of the tissues and to establish a localized infectious process. The same explanation, in many cases, applies to the formation of boils, abscesses, bed-sores, etc. And, in general, the development of an attack of any infectious disease, general or local, depends: 1st, upon the presence of a specific infectious agent; 2d, upon an inherited or acquired predisposition to infection; and 3d, in many cases, upon a direct exciting cause—*e. g.*, catching cold, great fatigue, mental anxiety and especially fear, gastric or intestinal irri-

tation (especially in cholera), a bruise or traumatism of some kind (in erysipelas, tetanus, abscess, etc.)

PNEUMONIA.

A REVIEW OF THE CASES STUDIED BY THE THIRD AND FOURTH YEAR CLASSES, JOHNS HOPKINS HOSPITAL, SESSION OF 1896–97.

By William Osler, M. D.,
Professor of Medicine, Johns Hopkins University.

In the memorable address with which Sir James Paget opened the Seventh International Congress in London, he spoke of our profession as one that "offers the most complete and constant union of those three qualities which have the greatest charm for pure and active minds—novelty, utility and charity." This element of *novelty* is one with which even those of you who are only beginning your clinical work must be much impressed. For the past eight weeks we have been studying together the prevalent acute diseases—malaria and typhoid fever; and now the picture begins to change, and the presence in the wards of several cases reminds us that the pneumonia season is at hand. We shall begin to-day a systematic study of this the most important acute affection you will be called upon to treat—a disease with manifestations perhaps less multiform than typhoid fever or malaria, but one infinitely more dangerous, and much less under our control. As our aim is to make this a school of practical medicine, I dispense as far as possible with all theoretical and didactic considerations, and make the cases teach the lesson of the disease. In the ward classes you will see (as far as is possible) and have notes of every case of pneumonia admitted this session, and I have asked one of your number to be Recorder, and fill up week by week on the blackboard a tabular list, so that you can, as we say, "keep track" of them. Before speaking of the cases now under observation, let me give you in a brief summary our pneumonia lesson of the last session. I am indebted to Mr. Ford, the Recorder of the cases last year, for an excellent analysis.

In a general hospital we see five groups of cases: (1) acute pneumonia developing in healthy children or adults, or in debilitated or dissipated persons; (2) pneumonia developing after anæsthesia or surgical operations; (3) the terminal pneumonia in old hospital cases, a form more often recognized in the dead-house than in the wards; (4) cases admitted with the sequelæ or complications of pneumonia, and (5) cases admitted as pneumonia, but which prove to be some other disease. Let me refresh your memories by a brief review of the cases of the last session grouped in this way.

I. Ordinary pneumonia. There were twenty-five cases admitted. The ages were as follows: under 10 years 7 cases; the youngest case was No. 23, a child aged 2½ years; between the ages of 30 and 50 there were 9 cases; the oldest case was No. 20, a man aged 71 years. The part of the lung involved: left lower lobe 10 cases; left upper lobe 2; right lower lobe 16; right upper lobe 9; double pneumonia 6 cases. A majority of the cases pursued an uneventful course. Well marked crisis occurred in 20 cases—on the fourth day in 2 cases, on the fifth day in 1 case, on the sixth day in 2, on the seventh day in 5, on the eighth day in 3, on the ninth day in 2, on the tenth day in 2, on the eleventh day in 2, on the fourteenth day in 1.

Death occurred in five cases, giving a mortality of 20 per cent, which is somewhat lower than is usual in the disease and lower than our total mortality for the past eight years. Case 5, a child aged five years, died on the twenty-fifth day of a streptococcus empyema. A rib was resected and the pleura drained, but there was a general streptococcus septicæmia. In case 6 the patient died of double pneumonia with pericarditis on the eleventh day. Case 7 died of asthenia on the fifteenth day, with a complication of pericarditis. Case 11 died of asthenia on the thirteenth day. Case 24 died on the eleventh day with consolidation of all of the right lung, and the lower lobe of the left.

I have frequently called your attention to the fact that with the exception of involvement of the pleura and pericardium, complications and sequelæ are rare in pneumonia. In only two of the cases did an extensive pleurisy with effusion develop. One case had jaundice. A leucocytosis was present in all of the cases. The lowest count was 12,400 leucocytes per c. m. in case 11, a hard drinker, aged 48, who died on the thirteenth day. The highest count of leucocytes was 63,000 per c. m.

II. Through the kindness of my colleague, Dr. Halstead, and of Dr. Bloodgood, we have been able to keep track of the pneumonia cases developing on the surgical side. The three cases are particularly interesting, as they illustrate the three chief conditions under which pneumonia occurs in surgical practice. It is well known that after injuries, particularly in elderly men or in hard drinkers, pneumonia is very liable to develop. A man admitted March 2, 1897, with a compound fracture of the right tibia and fibula, contracted pneumonia on the thirteenth day. He had consolidation of the right lower lobe, which was followed by an extensive pneumococcus empyema, necessitating resection of the rib and drainage. He made a good recovery.

It is not very uncommon for surgical cases in general hospitals, whether they have been operated upon or not, to be attacked with pneumonia. An exceedingly interesting case of Dr. Finney's was a man aged 48, whom I saw on his admission, with a distended painful abdomen and signs of obstruction. Dr. Finney operated at once and found a strangulation by a small retro-peritoneal band, which was readily nicked and at once relieved the pressure. The patient did well, but three weeks subsequently developed pneumonia in the left lower lobe. It ran a very favorable course and terminated by crisis on the seventh day.

A form of pneumonia of the greatest interest to surgeons is that which follows the administration of an anæsthetic. Renewed attention has been directed to the subject by Mr. Clement Lucas, of Guy's Hospital, and the London journals of the past year contain a good deal of interesting matter upon it. The question has also been discussed in Boston, and you will find in the Boston *Medical and Surgical Journal* for September 23 a suggestive paper by Dr. W. F. Whitney. This "ether pneumonia," as it has been called, differs in no way from the ordinary form, and it is probable that prolonged and profound etherization is simply a condition which increases the liability to infection, if the pneumococcus happens to be present (as it so often is) in the patient's air passages. It is remarkable with what rapidity an ether pneumonia may kill. We have had one case in which the patient died on the second day. The only case during this session was one of gastrotomy for malignant stricture of the oesophagus in a woman aged 70. She died a few days after the operation of pneumonia involv-

ing the bases of both lungs. Dr. Whitney suggests that before operation the mouth should be thoroughly disinfected and the throat gargled with a warm solution of chlorinated soda, (Labarraque's solution), three drachms in two ounces of peppermint water and two ounces of glycerine ; and that the nose should be douched with a solution of boracic acid and salt.

III. Terminal Pneumonia. Cases of chronic diseases are not infrequently carried off with a terminal inflammation of the lung. In pulmonary tuberculosis, the various forms of Bright's disease, cirrhosis of the liver, all forms of chronic heart disease and diabetes, the end may be caused by inflammation of the lungs. This is frequently overlooked in the wards and not detected until the autopsy ; in fact the remarkable discrepancy between the post-mortem and clinical records of a hospital in the matter of pneumonia is largely accounted for by this terminal form, the existence of which is often masked by the other features of the case, or which indeed may not present any suggestive indications. The only case of the kind under observation last year you still remember very well. Ida A——, aged 17, who was in ward G for the greater part of the winter with chronic Bright's disease. The condition became much aggravated; she had a great deal of anasarca, and grew much debilitated. On March 8 she began to have dyspnœa, and we detected signs of consolidation in the left lung. She died on the 12th day.

IV. As I mentioned a few moments ago, we had no case of pneumonia admitted to the wards which showed any of the serious sequelæ, but one case was admitted which illustrated one of the most serious terminations of the disease ; namely, abscess. The patient, a man aged 57, was admitted March 25, 1897. His illness began on January 3, with a chill, pain in the right side and shortness of breath, and from the statements which he gives, there is little doubt that he had an ordinary pneumonia. From the outset he had fever, loss in weight, shortness of breath, and cough, with expectoration of a very ill-smelling sputa. The patient presented signs of cavity in the lower lobe of the left lung. The sputum was abundant, with a sweetish, sometimes a very foul odor ; elastic tissue and tubercle bacilli were not found. The question of operation was considered, but he refused, which, considering his very weak state, was, I think, wise. He went to his home and died on April 6.

V. No cases are of greater interest than those which present at the outset all the features of frank pneumonia, but which subsequently prove to be the subjects of the pneumonic form of pulmonary tuberculosis. The most interesting of the two cases, as we were able to follow it almost from the outset, was that of A. H., aged 52, a Dane, who was admitted February 12, 1897. He had been steward on a steamer, and had been taken ill suddenly only a few days before admission, with a chill, cough, dyspnœa and labial herpes. He had dullness with tubular breathing at the right apex. The sputum was at first rusty colored, and there was no suggestion whatever that the condition was anything but ordinary pneumonia. He had very slight leucocytosis; the temperature was not very high, but subsequently there were signs of pleurisy in the left axilla. After the tenth day, when no crisis occurred, we became a little suspicious, and the sputum was very carefully examined. Tubercle bacilli were found on the twelfth day, elastic tissue on the twentieth day. The sputa had also, some of you may remember, that very greenish hue upon which Traube laid so

much stress in these cases. Death occurred on the forty-third day, and the autopsy showed the right lung uniformly involved in a fresh tuberculous pneumonia. There was a small cavity in the lower lobe. The left lung showed an old cheesy focus and areas of fresh tuberculous infiltration.

About the other case we could not be so positive. A man aged 58, admitted December 3, 1896, had dullness over the right lung from apex to base behind, with intense tubular breathing. He had been ill for about six weeks before admission with pain in the right side, cough and dyspnœa. We never found tubercle bacilli or elastic tissue in the sputa. The temperature was not high during the short time he stayed in hospital. He emaciated very rapidly, went to his home, and died within three months of the onset of his illness. He had chills and sweats and involvement of the other lung. There was a history of consumption in his family and though the positive evidence furnished by the tubercle bacilli in the sputa was not forth-coming, yet I think there can be very little question that in this case, too, the process was tuberculous.

Some concrete positive knowledge of these 32 cases makes a good clinical beginning for the fourth year students among you, and should you double this experience during the present session you will at least start with a fair fighting knowledge of one of your worst foes.

THE BLOOD IN PNEUMONIA.

By T. B. Futcher, M. B.,
Associate in Medicine, The Johns Hopkins University.

Fränkels' diplococcus has been repeatedly found in the circulating blood of pneumonic patients. In most of these cases there have been secondary diplococcus infections, such as diplococcus endocarditis for example. Bacteriological examination of the blood in pneumonia can never be expected to come into general use for diagnostic purposes, however. Clinical experience has shown that the prognosis in those cases where the organism gets into the general circulation is extremely bad. Thus, Belfanti in examining the blood of a large number of pneumonia patients, found the diplococcus in six cases, five of whom died. Bouley found diplococci in the blood in two cases, both of which terminated fatally. Sittmann made bacteriological examination of the blood in sixteen cases of croupous pneumonia, finding diplococci in six cases. Four of these cases died, while only one out of the ten cases in which the cultures were negative was fatal. Foa and Bordoni Uffreduzzi found diplococci in the blood of a dead foetus, whose mother had died either of pneumonia or meningitis. Diplococci were found by Bozzolo in the milk of a woman who had an attack of pnemonia six months after delivery. The child in this case remained healthy.

Coagulation of the blood is very rapid in pneumonia as can be demonstrated by the use of Wright's Tubes. This can frequently be readily made out in the fresh specimen of blood by watching the rapid formation of the fibrin net work.

Monti and Berggrün found that the specific gravity of the blood in pneumonic children was very high and increased with the progress of the disease, diminishing again after resolution set in.

During the height of the fever in pneumonia the red cells are usually either normal or but slightly diminished. Those cases with cyanosis may show quite a considerable increase in the number of red cells over the normal. After the crisis a post-febrile anæmia

usually of moderate grade may occur. The degree of anæmia may become much more marked in those cases where jaundice occurs. Grawitz considers the occurrence of the jaundice and the presence of an increased quantity of hydrobilirubin in the urine occurring in some cases as evidence that there is an increased destruction of red blood cells going on in the liver. This same observer also believes that the relaxation of the walls of the smallest blood vessels in the post-critical period leads to a dilution of the blood, which in part explains the diminution in the count of the red cells.

With the diminution in the number of the red blood cells there is usually also a moderate diminution in the percentage of hæmoglobin during the post-febrile period.

Of especial interest in pneumonia are the changes which the leucocytes may undergo. Nearly all observers agree that in the great majority of cases there is a more or less marked leucocytosis. The increase in the number of leucocytes may appear as early as the initial chill or at least within a very few hours after it. Kikodske believed that there was a definite relationship between the leucocytosis and the temperature curve, stating that at the crisis in the temperature there was also a crisis in the number of leucocytes. Although, in a rough way, the leucocyte and temperature curves correspond more or less closely, it is now generally held that there is no definite relationship between the number of leucocytes and the fever. This is in part shown by the fact that the crisis in the leucocytes may occur before or may be delayed for a number of days after the febrile crisis. Further, pseudo-crises in the temperature are not accompanied by a corresponding drop in the number of leucocytes, and Limbeck has pointed out that the latter may even be increased in number during the drop in temperature. Monti and Berggrün hold that there is a definite relationship between the leucocyte count and the extent of the lung infiltration. That such may be the case is suggested by the fact that where there is delayed resolution, often a persistence of the leucocytosis occurs. Von Limbeck is inclined to the view that the number of leucocytes is more likely dependent on the virulence of the infective organism and the power of resistance of the individual attacked. Whatever the determining factor may be it is a well recognized fact that a certain percentage of pneumonia patients have no leucocytosis. Kikodske and von Jaksch hold that the prognosis in cases unaccompanied by leucocytosis is much graver than where there is a well-marked leucocytosis. Billings, in his study of the leucocytes in 22 cases of pneumonia, admitted to the medical wards of the Johns Hopkins Hospital was able only in part to confirm this view. Clinically, however, one does seem to meet with many more deaths in pneumonia cases without than in cases with leucocytosis, and I have on repeated occasions in the last three years heard Prof. Osler and Dr. Thayer give a grave prognosis on the presence of a small number of leucocytes, the subsequent fatal termination of the case justifying the unfavorable prognosis. Cabot supports the view that the number of leucocytes is dependent on the bacterial products and the resistance of the person attacked and divides the pneumonia cases into three groups, an follows:

1. Mild infection, vigorous reaction—slight leucocytosis.

2. Severe or moderate infection, vigorous reaction—marked leucocytosis.

3. Severe infection, feeble reaction—no leucocytosis.

Cabot states that the cases in Group 1

are few in number but all recover. Group 2 includes nine-tenths of all cases and the patient may or may not recover according as the fight between the patient and disease comes out one way or the other. Cases coming under Group 3 almost invariably die.

Von Jaksch, recognizing the more favorable course of those cases with leucocytosis attempted to produce artificial leucocytosis in those cases where the leucocytes were not increased, by the use of injections of pilocarpine, antipyrine, etc., but without favorable results.

The highest number of leucocytes in Billings' 22 cases was 68,000. The leucocytosis is nearly always a pure leucocytosis, that is, an increase in the polymorphonuclears. Occasionally, however, the small lymphocytes may be enormously increased as in a case recorded by Cabot.

Where "central pneumonia" is suspected and where physical signs are for a considerable time absent, the presence of a leucocytosis is a very valuable point in diagnosis. The presence of a leucocytosis in such cases fairly definitely excludes typhoid fever, malaria and uncomplicated influenza.

In giving a prognosis in pneumonia there seems sufficient evidence to justify one in being very guarded in his statements in those cases unaccompanied by leucocytosis.

Livierato found that by means of the Iodine and Potassium Iodide test he was able to demonstrate glycogen in the blood of many pneumonia patients. The glycogen was partially within and partially outside of the leucocytes and the amount appeared to hold a definite relationship to the extent of the inflamatory process and the height of the fever.

CATARRHAL INFLAMMATIONS OF THE UPPER AIR PASSAGES AS THEY APPEAR IN WASHINGTON AND ITS VICINITY.

By J. H. Bryan, M. D.,
Washington, D. C.

In discussing the subject of catarrhal inflammations of the upper air tract as they appear in Washington and its vicinity it will be possible for me to give only my personal experience with these affections, as it is impossible to obtain any statistical data that would be of any value, owing to the fact that no public records are kept from year to year which would show the greater prevalence of these affections during one year over that of another. The statement has frequently been made to me, especially by non-resident patients, that Washington is an unusually favorable place for the development of catarrhal diseases, and a great deal of valuable time has been wasted in trying to disprove this unjust criticism of an unusually healthful city. Such patients frequently leave their homes suffering from catarrhal affections of the air passages and they are surprised to find the same atmospheric conditions prevailing here that brought about their disorders at their own homes. While the climate of Washington is a changeable one, it differs not very much from that of other cities on our Eastern sea-board, except that is not so severe as found in some of the Northern and Eastern cities.

Catarrhal inflammations of the upper air passages prevail the world over, but they are more frequently met in cold than in warm climates, and in high than

in low latitudes. In the Temperate Zone these affections are more frequently met with between the isotherms of 64° and 34° F.

In order to fully appreciate this subject it is necessary to know the superficial contour as well as the geological character of this region before the full influence of humidity, temperature and barometric changes, and the direction of the winds can be fully appreciated.

Briefly, Washington is best described as an amphitheatre partially surrounded by hills, and is drained by the Potomac river, which is tidal for a short distance above the city. Its surface is composed of sand and gravel mixed with clay, overlying ancient crystalline rocks, thus forming a suitable soil for good drainage.

There are three periods of the year when these affections are quite prevalent, one period including the months of January, February and March; a second including April and May, and a third extending from August 15 to about October 15, or about the appearance of the first frost.

The causes of catarrhal inflammations are both exciting and predisposing. Among the former may be mentioned a sudden exposure when the body is scantily clad, thus giving rise to the phenomenon of catching cold. A much more potent factor in the production of these disorders than simple exposure is the degree of relative humidity associated with a low temperature. In trying to trace some relationship between the appearance of these affections in Washington and the changes in temperature, barometric pressure, relative humidity, and the direction of the winds, I have received through the courtesy of the U. S. Weather Bureau observations made at that office during the past ten years:

MEAN TEMPERATURE.
Washington, D. C.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sep.	Oct	Nov.	Dec.	Annual.
1887	32.9	38.9	38.5	51.6	67.9	72.1	80.5	73.2	65.0	55.4	44.9	37.2	54.8
1888	29.2	35.7	37.4	52.9	62.7	73.0	73.6	75.8	64.8	52.6	47.4	37.5	53.6
1889	39.2	31.1	43.4	54.4	64.6	70.8	75.8	72.4	65.6	52.5	46.2	45.6	55.1
1890	43.8	43.4	41.4	53.6	63.8	74.8	75.0	73.6	67.8	56.4	48.0	34.2	56.3
1891	37.4	41.4	38.6	55.4	61.4	71.6	72.0	74.5	70.3	54.4	44.0	43.2	55.4
1892	31.6	37.0	37.7	51.4	63.8	76.2	75.8	76.2	66.1	55.4	43.7	33.2	54.0
1893	24.6	35.1	41.1	53.8	61.6	72.5	77.0	74.6	66.0	56.5	43.6	38.3	53.7
1894	37.8	35.2	48.5	53.2	65.9	73.6	77.9	74.0	71.4	57.9	44.0	37.4	56.4
1895	31.6	26.2	41.8	53.8	62.6	74.6	72.8	77.2	72.4	52.1	46.4	38.8	54.2
1896	33.3	36.7	38.5	56.6	68.8	71.3	76.7	75.8	67.8	54.0	50.6	35.6	55.5
.....	34.14	36.06	41.69	53.67	64.09	73.05	76.71	74.63	70.70	54.72	46.18	38.10	.....

Taking the average for the ten years it will be observed that the lowest temperature prevails during the first period while the relative humidity is high. The prevailing winds during this period are northwesterly and northeasterly.

MEAN RELATIVE HUMIDITY.
Washington, D. C.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1887	68	71	60	62	69	68	72	73	73	66	60	70	68
1888	74	76	69	59	74	70	77	80	84	77	75	68	74
1889	74	69	68	69	73	78	80	79	82	76	78	73	75
1890	72	75	67	64	73	69	71	78	82	76	71	71	72
1891	75	74	73	62	68	74	77	82	83	74	73	70	74
1892	74	73	70	65	69	75	76	73	74	68	70	74	72
1893	71	68	65	67	69	73	67	67	76	77	74	71	70
1894	77	73	66	63	70	68	68	76	77	76	68	75	71
1895	77	63	62	64	73	72	75	72	73	64	81	74	71
1896	69	67	67	66	73	75	77	72	78	73	74	67	72
.....	73.1	70.9	68.2	64.1	71.1	72.2	74	75.2	78.2	72.7	72.4	71.3	...

In the three forces, the temperature, relative humidity and the direction of the winds, we have the factors that cause a greater prevalence of catarrhal inflammations of the upper respiratory tract than at other seasons of the year.

Aside from the effects of the changes in the atmosphere the inhalation of irritating vapors and finely divided mechanical irritants are important factors in the production of these conditions. In Washington we have the finely divided dust from our beautifully asphalted avenues, a prolific source of irritation of the mucous membrane lining the upper respiratory tract. This irritation is noticed more especially in the nasal and post-nasal cavities. Autumnal catarrh, which is only prevalent in Washington and the surrounding country, is dependent for its exciting cause upon finely divided particles such as pollen from flowering plants. The rag-weed which grows so luxuriantly in this region is supposed to furnish the pollen which serves to excite this most obstinate of all affections of the upper respiratory tract.

A very common cause for these affections at the present time is the epidemic influences of influenza, an infectious disease whose local manifestations are at times intense but which differ in no wise from those of a simple catarrhal inflammation. Washington has frequently been visited by epidemics of influenza during the past few years.

A more limited number of cases arise from some systemic or organic influence, or from some functional disturbance, and a few depend upon some structural defects in the parts themselves. Among the predisposing causes from within the organism are gastro-intestinal disturbances arising from errors in diet, or overindulgence of the appetite. It is a matter of common occurrence that a defective digestive process and imperfect assimmilation exert their harmful effects in the production of reflected irritation in the upper air passages. This is frequently observed in children under the third and fourth year, in whom the attacks of indigestion so readily occur. Aside from the reflected irritation, gastro-intestinal disorders are frequently the direct source of inflammation of the upper air tract. Chronic pharyngitis, one of the most universally distributed diseases of this region, has probably for its most common origin, disturbances of the stomach.

Prominent among the causes of catarrhal inflammations of the pharynx,

larynx and trachea may be mentioned the pernicious habit of mouth breathing resulting from some morbid condition within the nose, or from an hypertrophy of the post-nasal lymphoid tissue in the vault of the naso-pharynx. The cold unmodified air passing over the pharynx into the larynx and trachea afford a great disposition to catarrhal inflammation of these organs. It is only recently that the full importance of this subject has been realized by the profession at large, and the necessity for relieving all obstructive nasal and post-nasal disorders especially in the young, in order to prevent this most injurious of habits.

SOME REMARKS ON THE CLIMATE OF WASHINGTON, D. C.

By W. F. R. Phillips, M. D.,
Washington, D. C.

The climate of a place or region represents the summation or totality of all the natural conditions of the place or region, at least that is what we evidently desire to know when we ask what kind of a climate a place has. Meteorologists, however, are disposed to restrict the use of the word climate to signify the summation of the weather of a place or region, and it is in this somewhat narrowed sense that the word is used hereafter in this article. By weather is meant the momentary composite condition of the atmosphere with respect to its temperature, humidity, motion, pressure, transparency, diathermancy, electrification, purity and other meteorologic conditions.

The narrative of the weather at any particular moment usually consists of a record, more or less complete, made several times a day, of the temperature, motion, humidity, pressure and transparency of the atmosphere, and if any rain or snow has fallen, the amount and duration. The various conditions of these different elements are used as measures by which climate is estimated. The terms generally used to indicate the climate of a locality are based upon a somewhat arbitrary interpretation of the average values of these different elements for the different months and seasons, as warm climates, moist, bracing, etc. This method of estimating climate from the general averages of the different components of the weather, although valuable and in a measure indispensable, may convey, if not properly safeguarded, a false impression as to the real nature of the climate. An illustration will show more forcibly than a brief description possibly could the general character of the errors to be guarded against. For example, take two places, for instance Tatoosh Island, Washington, and Des Moines, Iowa: the average temperature for the year is 49° for both, and yet as regards temperature the climate of the two places is not alike. The average temperature of the warmest month at Tatoosh Island is only 56° as compared to 75° for the warmest month at Des Moines. The difference that exists between these two places may also be shown in another manner: the highest temperature recorded at Des Moines has been 104° and the lowest 30° below zero, while the highest at Tatoosh Island has been but 78° and the lowest but 7°. Considerable differences may often be shown when the average temperatures of a month, or even a day, are analyzed. Take by way of illustration the average January temperatures of New York City and St. Louis, which are respectively 30.8° and 31.4°. The average difference between the warmest and coldest parts of the day is at New York 14° and at St. Louis 20°, showing that while on the whole the average temperature of January at St.

Louis was a little higher than that at New York, yet the fluctuations were less extreme in the latter place, or in other words the temperature of January was more equable in New York than in St. Louis. Illustrations might be multiplied not only as regards temperature, but as to rainfall and all the other elements of the weather concerned in making the climate of a place, but it is not necessary as those already cited are ample to demonstrate the fact that simple averages are not adequate for even a moderately accurate conception of climate. In addition to averages there should be known the variations from the averages. These variations should be given both as *average* variations and as *extreme* variations. The average variations will indicate the probabilities, and the extreme variations the possibilities of the climate. Thus a knowledge of the climate of a locality can only be had by a careful and compendious analysis of the various meteorologic elements, and such analysis involves a vast amount of labor, very much more than is systematically devoted to the subject.

In the appended table an effort has been made to present a partial analysis of some of the more common points of interest concerning the temperature, winds, humidity, and state of the weather as they have been recorded at the Weather Bureau station at Washington, D. C.

The general climate of Washington falls about midway between the continental and coastal types. The ranges of temperature and humidity are greater than upon the immediate coast and less than at places farther inland; the wind is somewhat less steady than, and not quite so strong as, on the coast. The atmospheric pressure is virtually that of sea-level for the latitude.

The average monthly temperatures range from 33° in January to 77° in July. The average temperature for the winter months is about 35°, for the spring 53° and for the autumn 57°. There is considerable variation from these averages as will be seen from the details given in the statistical table, where it will be noticed that while the average temperature of January is 33°, yet it has been as mild as 44° and as cold as 25°. Also from the same table it will be seen that the daily range of temperature for the same month is on the average 15°, but it has been at least once as great as 34°. And although on the whole one January day is not warmer or colder than its predecessor or successor by more than 6°, yet it has been on one occasion at least 24° warmer or colder. And so on for the different elements for the different months. The rainfall is on the average fairly uniformly distributed through the year, November having the smallest rainfall, 2.88 inches, and July the largest, 4.84. However, the number of days upon which rain falls does not coincide exactly with the amount of fall; September and October have the fewest wet days, and there is virtually no difference between the other months with respect to the number of rainy days. So far as the humidity of the atmosphere is concerned it is subject to very much the same vicissitudes as the temperature, being in a manner largely controlled by the latter.

The climate of Washington during the colder part of the year might on the whole be described as being mild and moderately moist, but subject to considerable sudden fluctuations in both temperature and humidity, about 45 to 55 per cent of the weather being sunshiny, and rain (or snow) falling on about ten days of each month.

Climatologic Statistics for Washington, D. C., from the Records of the Weather Bureau.

WEATHER CONDITIONS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Number of Years Represented in Record.
TEMPERATURE.													
Average or Normal	33	36	41	53	64	72	77	74	68	57	45	36	26
Warmest Month.													
Year	1890	1890	1878	1878	1880	1874	1876	1872	1881	1881	1896	1889	"
Degrees	44	43	49	58	70	78	81	79	77	63	51	46	"
Coldest Month.													
Year	1893	1885	1885	1874	1883	1878	1891	1874	1871	1876	1880	1876	"
Degrees	25	27	34	48	59	69	72	72	62	51	40	26	"
Highest.													
Degrees	76	78	83	93	96	102	103	101	104	92	80	73	"
Day	12	23	22	18	26	9	18	13	7	3	13	4	"
Year	1890	1874	1894	1896	1880	1874	1887	1881	1881	1879	1879	1893	"
Lowest.													
Degrees	−14	−2	4	22	34	46	53	49	38	26	12	−13	"
Day	1	5	4	19	1	1-6	20-22	24	26	31	22	31	"
Year	1881	1886	1873	1875	1876	1873, 1894	1890	1890	1879	1893	1880	1880	"
Daily Range.													
Average	15	16	17	19	20	19	18	18	18	19	16	15	25
Greatest	34	34	40	43	40	33	30	32	39	41	38	37	10
Daily Variability.													
Average	5.9	6.6	5.9	5.2	4.5	3.7	3.2	3.1	3.9	4.7	5.4	5.5	16
Greatest	24	27	27	23	17	17	12	17	14	24	26	22	7
HUMIDITY.													
Average relative (per cent)	68	71	60	62	65	71	67	72	71	61	67	72	7
Average absolute (grs. pr cu. ft.	1.54	1.74	1.82	2.86	4.38	6.15	6.80	6.58	5.38	3.31	2.29	1.75	7
PRECIPITATION (RAIN, SNOW, ETC.)													7
Average Monthly	3.50	3.31	4.08	3.16	3.90	4.29	4.84	4.44	3.82	3.27	2.88	3.01	26
Greatest Monthly.													
Year	1882	1884	1891	1889	1889	1883	1886	1875	1876	1885	1877	1878	"
Amount	7.09	6.84	8.84	9.13	10.69	8.55	10.63	12.93	10.81	8.69	7.18	4.94	"
Least Monthly.													
Year	1872	1872	1894	1896	1875	1873	1872	1892	1884	1874	1890	1889	"
Amount	0.23	0.93	0.98	1.07	1.01	1.63	0.82	0.85	0.14	0.29	0.79	0.19	"
Greatest Amount in 24 Hours.													
Amount	2.28	2.29	2.79	3.21	3.50	4.16	5.80	2.84	5.66	3.98	2.83	2.70	"
Day	4	5-6	9	26	7-8	22	29-30	29	15-16	4	24	17	"
Year	1886	1896	1881	1889	1886	1886	1878	1875	1874	1877	1877	1888	"
Greatest Amount of Snow in 24 Hours.													
Amount	5.0	10.0	6.0	4.0	....	....	....	...	....	(a)	2.5	10.0	"
Day	12	3	11	6	....	....	....	....	...	23	5	26	"
Year	1893	1886	1888	1889	....	....	....	....	....	1889	1891	1890	"
WEATHER.													
Average Number of Days.													
Clear	7	7	8	9	10	9	10	10	11	12	9	9	"
Partly Cloudy	12	11	12	12	12	15	14	13	11	11	12	12	"
Cloudy	12	10	11	9	9	6	7	8	8	8	9	10	"
0.01 inch or more of Rain, etc., fell on	12	11	12	11	12	11	11	12	9	9	10	11	"
Greatest Number of Days.													
Clear	15	14	16	17	20	19	17	20	20	25	19	16	"
Partly Cloudy	18	16	19	17	15	20	19	17	20	16	18	19	"
Cloudy	16	15	19	14	17	11	15	17	15	16	16	16	"
0.01 inch or more Rain, etc., fell on	20	17	18	17	18	16	17	18	15	16	17	15	"
Smallest Number of Days.													
Clear	3	3	3	5	5	5	4	4	5	3	3	4	"
Parly Cloudy	1	5	1	7	4	5	6	4	5	3	5	7	"
Cloudy	6	4	5	2	4	2	3	1	1	2	3	3	"
0.01 inch or more Rain, etc., fell on	4	4	5	7	5	5	8	5	2	3	5	5	"
WIND.													
Prevailing Direction.	N W	N W	N W	N W	S	S	S	S	S	S	N W	N W	"
Highest Velocity.													
Miles	46	60	48	43	54	48	60	53	66	51	54	49	"
From	N W	N W	N W	N W	S W	S	N W	N	S E	N W	S W	W	"
Day	30	2	24	3	28	26	4.28	5	29	4	23	9	"
Year	1894	1876	1878	1879	1896	1877	1874, 1877	1878	1896	1877	1891	1876	"
Windiest Hour of Day.													
Hours	3 PM	3 PM	3 PM	4 PM	1 to 3 PM	3 PM	2 to 3 PM	3 PM	2 to 3 PM	1 to 2 PM	2 to 3 PM	1 to 2 PM	7
Velocity	7.5	8.2	10.0	9.3	7.7	7.3	6.7	6.3	6.5	7.6	7.7	7.7	"

(a) Trace of snow.

NOTE.—Temperatures are in degrees F. Precipitation (snow, rain, etc.), in inches. Daily variability of temperature is the average number of degrees one day is warmer or colder than the day before or the day after. Daily range of temperature is the average difference between the highest and lowest temperatures recorded for the day.

ON THE WATER SUPPLY OF WASHINGTON, D. C.

By Deputy Surgeon General Charles Smart, U. S. Army.

In February, 1894, I delivered an address on Drinking Water under the auspices of the Sanitary League of Washington, D. C. After discussing the subject in a general way, I brought the matter home to the audience by referring to the inefficiency of the arrangements for the purification of the Potomac water supply, and attributing our high death rate from typhoid fever to this inefficiency. I showed that our death rate was much higher than that of many American cities, such as Brooklyn, New York, Boston, Baltimore and New Orleans, where care is exercised to keep clean and free from sewage the drainage areas which constitute the sources of supply. The inflow of sewage into the river above the Great Falls is small, but it is enough to give us 75 deaths annually per 100,000 of the population, as compared with 15 per 100,000 in the city of Brooklyn. "Putting," I said, "our population at a quarter of a million, we have 150 unnecessary deaths every year. Ah! but the cases? Multiply the deaths by from 10 to 20. Two or three thousand cases of serious sickness, each lasting from two to six weeks. Think of the suffering, anxiety and sorrow involved in the history of three thousand cases, and say whether an appropriation having in view the purification of the city water supply is a good investment or a poor one."

Much that has occurred since then in various parts of the world has strengthened me in the position which I then took: That until the general water supply was purified the people of Washington would continue to be victims of this dangerous but preventable disease. Washington suffers also from a high death rate from malarial fevers. United States troops serving in all parts of the country, and often camping in malarious localities, when on escort duty, practice marches, etc., have few deaths from these fevers. Their average annual death rate from malarial diseases during 1891–96 was only 6 per 100,000, while the lowest annual rate in Washington during the decade 1885–94 was 22.5 in 1894 and the highest 47.1 in 1887; in 1882 it ran up to 59.4. For many years I have held the belief that these fevers are susceptible of propagation by the water supply. This belief is now shared by many sanitary officers in civil as well as military life. That the plasmodium of Laveran, the germ of malarial fever, has not been found in water supplies does not militate against this because it has not been found in air, although few medical men doubt the aerial propagation of malarial diseases. The life history of the malarial germ has not been followed satisfactorily outside of the human body, but since it seems certain that its history is connected with soil fermentation, there is no reason for supposing that it may not be washed from the fermenting soil by surface waters. Malarial fevers prevail in non-malarious districts when the water supply consists of surface waters draining from a malarious locality, and, more convincing still is the fact that these fevers have ceased in localities notoriously insalubrious when the surface water supply was replaced by a pure filtered water from deep wells. The lessened prevalence of malarial fevers at our military posts in the West during the past few years has been coincident with successful efforts to procure a purer water supply. I infer from this that there are few surface waters draining from malarious localities that do not have malarial possibilities. As the agent of the malarial infection is fortunately particulate, it may be removed by efficient filtration. That the malarial fevers of Washington are mainly attributable to an air-borne infection is allowed, but in an argument for the purification of the Potomac water the high malarial death rate and the malarial possibilities of the raw or unpurified river water should not be overlooked.

It is, however, the typhoid fever death rate of this city which calls so urgently for efficient purification of the general water supply. The bacteriologists have not as yet been able to detect the typhoid bacillus in water supplies, but we know that the bacillus is there because people who drink infected water die of fever. Nor can the chemists tell us when the bacillus is present; but both bacte-

riologists and chemists can, in many instances, inform us when sewage leaks into a water supply, and when this is the case there is always danger of infection. In a river like the Potomac we require neither bacteriological nor chemical evidence to determine sewage pollution. We can see the sewage enter the stream. The sewage of certain small settlements on the drainage area above the intake may not be infected, but the sewage of the settlements taken as a whole must be infected, because typhoid fever is so common. I have seen country-house typhoid where the dejecta had been thrown out on an incline down which the next rainfall would sweep it into one of the creeks tributary to the Potomac. And it does not require the dejecta of a large number of patients to start a local outbreak of the disease among the down-stream users of the water. Plymouth, Pa., had 1,200 cases and 130 deaths, because the excreta of one patient were washed into the water supply. Just now the town of Maidstone, in Kent, England, is having an experience of water-borne typhoid similar to that of Plymouth. It is certain that if these two towns had kept infected sewage out of their water they would not have suffered; and it is just as certain that if the city of Washington kept infected sewage out of its water supply it would not have an annual typhoid death rate of 75 per 100,000 of its population. But it is difficult to do this. The Potomac and Shenandoah valleys are large areas to police, and where is the power that is to effect it in the absence of a Federal Health Board or Central Health Authority? There are two alternatives: To find a new and unpolluted supply and keep it so, or to purify the present supply. The one is the better method, but the other is apparently within easier reach at the present time. Like the germ of malarial fever, the infection of typhoid fever is particulate and can be removed by filtration through sand. This has been demonstrated in this country by laboratory experiments conducted by the State Board of Health of Massachusetts, and on the large scale at Lawrence, Mass. It has been demonstrated on the large scale in European cities for years. London has had filtered water for sixty years. I have before me its typhoid fever death rates for the years 1869 to 1894, taken from the reports in the Library of the Surgeon General's Office. The mean annual rate for the last ten years was 14.4; the extremes 10.2 and 16.9. And the rates for the whole of England and Wales, although larger than those of London, show that much care is given to the purity of water supplies. The mean annual rate for the last decade on my list is 17.6, with the extremes 13.7 and 22.9. I have the Berlin rates from 1854. Before this city began to pay attention to the purity of its supply, the rates ran from 60 to 100. The highest rate was 143 in 1872. Since a systematically filtered water was introduced the highest rate was 18.4 in 1889; the rate in 1894 was 4 per 100,000. I have the Vienna rates from 1867. The highest rate was 181.8 in 1871. A pure water was obtained in 1874, and the rate fell immediately. During the past ten years it has been less than 10 annually. In 1894 the rate of Hamburg was 6; of Rotterdam 4.8. In Warsaw, where purification was effected in 1887, the typhoid rate was 60 to 105 annually during the period 1879–86, and 18 to 30 subsequently. I could give columns of such statistics, all showing that the deaths from typhoid fever are lessened in proportion to the care taken in providing a pure water supply.

Filtration through sand will remove from water both the typhoid bacillus and the plasmodium of malaria. The municipal and State authorities of Europe appreciate this, and protect the people from disease and death. With few exceptions we in the United States do not appreciate it, and we mourn annually over 40 to 75 deaths (generally the young and promising are the victims) out of every 100,000 of the population when the accidental propagation of typhoid fever by other means than the water supply should cause us a ratio of less than 10 deaths. Again, as I said in 1894: Look at the cases. Multiply the deaths by 10 as a minimum to 20 as a maximum to find the number of cases that have to be cared for. Calculate merely the financial loss, and you will find that money expended in purifying the water supply is money well invested.

The National Medical Review.

GEORGE W. JOHNSTON, M. D.,
AND
THOMAS E. McARDLE, M. D.,
EDITORS AND PUBLISHERS.

WASHINGTON, D. C., December, 1897.

In many of our medical schools the four years' course has been in operation a sufficient length of time to enable us to judge somewhat of its methods, its advantages and disadvantages. Whatever may have been the original idea as to how this additional time might be employed to the greatest advantage of the student, it actually seems to have been devoted more to imparting information in the newer specialisms of medicine than in perfecting his knowledge of its essentials; so that, while he leaves his college richer by numerous facts, it is to be feared that they are not likely to be long remembered nor prove of much practical utility; and that, after all, he is but little better equipped for the practice of his profession than he would have been under the old three-year system.

The acquirement of new facts is not the whole nor even the best part of education. The same fault is apt to lie at the basis of all teaching, whether it be primary, collegiate or medical. It is prone to be simply an effort to train the mind of the scholar to remember—to cultivate that one faculty; and we are very likely to regard as the most promising student in the class the man with the best memory.

But a trained memory is not the most valuable acquisition of the medical man; and while it is a possession of great usefulness in the struggle for fame or for existence, our great physicians have been marked out from among their fellows through the ownership and display of quite other faculties. The eminent men in our profession have all been keen observers, untiring investigators or deep thinkers; and it would seem as if the education of the medical student should therefore be directed largely to training him to observe phenomena, to arrange the data that he has collected, in logical system and order, and to deduce therefrom, following, when possible, the laws of cause and effect, principles of general or special application.

The first step in pursuing such a plan of medical education is the abolishment of the didactic lecture. It is true that a lecturer of fine delivery and impressive manner may infuse interest even into didactic instruction; but the talents of such a one could be utilized to greater advantage in elucidating and illustrating the facts previously learned by the student from a good, but not too compendious text book, in vitalizing them and in impressing them upon the mind.

In the few branches in which didactic instruction is essential, the recitation might well replace the lecture: in all others it might with profit be omitted altogether.

Again, the opportunities for bedside instruction might well be increased, and each individual be taught to see, hear and touch for himself. He would thus be brought into more intimate contact with the patient than is possible in the formal clinical lecture delivered in the hospital amphitheater. And the student could with advantage be more carefully instructed in the methods of clinical diagnosis, in the thorough and systematic investigation of diseased conditions, and might be made to play a more active rôle than he does at present, questioning the patient himself and describing what he has discovered by physical examination; for he may never learn how faulty his observations or deductions are

until he has attempted to formulate them in words.

Much of the instruction in medical schools is now practical and is given in the laboratories of the different departments. But it would seem as if the effectiveness of this method of teaching is in danger of being lessened by too advanced courses, too much apparatus and too much technique. The essentials that are being investigated are apt to be lost sight of among the intricacies of chemical solutions, stains, culture media and complicated glassware. A large portion of the student's life is now spent in the laboratory. If he comes forth thoroughly familiar with a few of the simpler and more necessary processes of investigation, his time has been well spent. But the danger is that the greater part of his efforts have been expended in attempting to master technical methods requiring apparatus and appliances that he is told he must have, yet cannot afford to buy, and would not have time to use, were he successful in his practice.

And, finally, the importance of emphasizing the interdependence of all the branches of medicine, should not be lost sight of, and he may, with advantage, be encouraged and guided in his attempts to correlate the data obtained in the different departments of his curriculum. If he study but one case in the later years of his course, let him study that one exhaustively and with special reference to this point. He may be shown a case of pulmonary tuberculosis in one of his visits to the hospital, and, at another time and place, may be taught to search for and recognize the tubercle bacillus. How much more valuable it would be if he were given the opportunity to investigate every aspect of the case at one and the same time; the history and probable source of infection; the general condition of the patient; the structural changes in the lung as revealed by physical exploration; the involvement of other tissues and organs in the pathological process; the range of temperature; the sputum and feces for the detection of the specific micro-organisms; the degree of anemia as shown by an examination of the blood; the condition of metabolism as indicated by the urine, etc., etc. The picture of this diseased condition, made clearer by the subsequent autopsy, would then be complete and ineffaceably impressed upon the mind of the student.

Let us have a four years' course by all means, but let it be simple and practical, and let us guard against its becoming too technical and cumbersome: individualize the student where it is possible and teach him to observe and think rather than to remember; a mind properly equipped will create knowledge: teach him system and thoroughness and the vast importance of the correlation of isolated phenomena, and the full value will be received for the additional outlay in time and money.

Notices and Reviews.

SIMON'S CLINICAL DIAGNOSIS—New (2d) edition, revised and enlarged. A Manual of Clinical Diagnosis by Microscopical and Chemical Methods. By Charles E. Simon, M. D., Late Assistant Resident Physician Johns Hopkins Hospital, Baltimore. Cloth, $3.50. Philadelphia: Lea Brothers & Co., publishers.

We are all familiar with the first edition of this valuable work. The second contains a great deal of fresh matter and a number of new illustrations. A knowledge of chemistry and of microscopy has become more than ever essential in diagnosis, and the study of disease cannot be prosecuted exhaustively without the aid of the special means with which this volume deals. The examination of the blood for the determination of the presence of the malaria parasite, Widal's serum test in the recognition of typhoid fever, the examination

of the gastric contents in the diagnosis and differential diagnosis of diseases of the stomach, are a few of the many procedures which have become absolutely necessary to the clinician. Many of them are elaborate and require special apparatus and a considerable expenditure of time. But in the majority of instances very little of either is required, and a few moments of intelligent labor will throw an abundance of light upon an otherwise complicated or obscure case. Dr. Simon's book contains all that it is necessary to know upon this special branch of clinical investigation; it is complete and satisfactory in every respect, and is the standard (if not the only) text book upon this subject in America.

HARE'S PRACTICAL DIAGNOSIS.—The Use of Symptoms in the Diagnosis of Disease. By Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. New (2d) and revised edition. Cloth, $4.75. Philadelphia: Lea Brothers & Co., publishers.

The first edition of this valuable book was issued from the press in August, 1896. The mere fact that a second edition was published in September, 1897, shows how great a need there was for a book dealing with diagnosis from the standpoint of the symptoms manifested by the patient. In this volume the unavoidable faults of a first edition have been expunged and many new facts have been added.

HUTCHISON & RAINY'S CLINICAL METHODS. By Robert Hutchison, M. D., M. R. C. P., Demonstrator of Physiology in London Hospital Medical College, and Harry Rainy, F. R. C. P., F. R. S. E., University Tutor in Clinical Medicine, Royal Infirmary, Edinburgh. Cloth, $3. Lea Brothers & Co., publishers, Philadelphia and New York.

We can heartily commend this book to the advanced student and the practitioner of medicine. It teaches first the principle that no complete diagnosis can be arrived at without systematic and thorough investigation; and second, it describes in detail the various means at our disposal for pursuing such inquiry exhaustively. A large number of busy physicians desire to become familiar with the latest methods of clinical investigation, but, for a variety of reasons, do not care to enter elaborately into the study of procedures requiring complicated apparatu or the outlay of considerable time. To this class the volume under consideration will particularly appeal. But the especial merit of the book, in our opinion, lies in the fact that it emphasizes the principle that the thorough and systematic study of a given case is not only of utility in arriving at an accurate and complete diagnosis in that individual instance, but begets a habit of mind that is a possession of infinite value to him who would be a successful practicioner or consultant.

THE PRINCIPLES OF BACTERIOLOGY. By A. C. Abbott, M. D., Professor of Hygiene and Director of the Laboratory of Hygiene, University of Pennsylvania, Philadelphia. Fourth edition, enlarged and thoroughly revised. Cloth, $2.75. Philadelphia and New York: Lea Brothers & Co., publishers.

In the fourth edition of this excellent book, new topics and ideas have been introduced, and the former opinions of the author, when necessary, have been modified to accord with the more recent developments in the science of bacteriology. Likewise, illlustrated descriptions of the bacillus of bubonic plague, of influenza, etc., have been included, as well as a number of new illustrations. It would be a work of supererogation to praise this admirable volume. That it has been found necessary to already publish a fourth edition, affords abundant evidence of its value and the appreciation everywhere accorded it.

AN EPITOME OF THE HISTORY OF MEDICINE. By Roswell Park, M. D. The F. A. Davis Co., Publishers, Philadelphia, New York and Chicago. Pp. 348. Profusely illustrated. Price, $2.00 net.

This book is another evidence of the indefatigable industry of its author. As a narration of historical facts the volume is well worthy of a place in every reading doctor's library. It is doubtful, however, if Prof. Park is sufficiently well informed on collateral sciences to write an accurately philosophical treatise on the relationship which has ever existed between medicine, philosophy, natural science, theology and even belles-lettres. If a second edition is ever demanded it might be advisable for the author to put aside the role of philosopher and state facts solely in the light of history.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS. By Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia, etc. With special chapters by Drs. George E. DeSchweinitz, Edward Martin and Barton C. Hirst. Sixth edition, cloth, $3.75; leather, $4.75. Lea Brothers & Co., publishers, Philadelphia and New York, 1897.

"When called to guide a patient through an illness the physician should be constantly a watchman, and a therapeutist only when necessity arises." Such is Prof. Hare's motto, and it cannot be improved upon. He enjoys the

proud distinction of being the author of the best text book of practical therapeutics published in America to-day. He has succeeded in weaving science and practice into a very close network, and he has, moreover, cemented the foundations of experience by the mortar of exact knowledge. He ever seeks to inculcate the possibility of using drugs with a distinct idea of the reason for their employment.

THE MEDICAL NEWS VISITING LIST FOR 1898. Seal Grain Leather, $1.25. Philadelphia: Lea Brothers & Co.

This valuable little book again makes its appearance, and will for another year prove a boon to the busy practitioner. It is furnished in four different styles, so as to satisfy the needs of every doctor, old or young, busy or otherwise. In addition to its value as a record of visits paid and money earned, it is a mine of desirable information.

Therapeutic Notes.

The Dietetic Treatment of Phthisis.—On comparing the methods of treatment of tuberculosis 50 years ago with those in vogue at present, it is evident that the success of any measure still depends upon proper dietetic and hygienic regulations. Consumptive patients are often capricious in appetite, and the gastric functions are frequently much impaired. It is under these circumstances that resort must be had to predigested albuminous food products, and among these Somatose has been found to possess such advantages as to render it indispensable in the diet of consumptives.

If the druggist found that every attempt at substitution cost him the physician's patronage, he would soon become tired of it, and would supply exactly what prescriptions call for.

Cure Your Eruptive Diseases.—Dr. Binkley, of Washington, Pa., says he has used Pineoline with success in the treatment of eczema, psoriasis, urticaria and herpes. In fact, he believes it to be useful in all cutaneous diseases; and the pleasant odor of the pine renders it agreeable to the most delicate olfactory sense.

Obesity and Allied Complaints.—In the hands of Dr. Poe, of Gray, Texas, Phytoline acted like a charm; less than one bottle causing his patient to lose 40 pounds, with no disturbance of the general health whatever.

The inquiries of Vahl in Denmark have shown that the growth of children is one-third greater in summer than in winter. If, however, the increased gain that should take place in summer is prevented by illness occurring at that time, then, during the following winter the rate of development is greater than it would have been had there been no sickness—in other words, there ensues a period of compensatory growth. But under ordinary circumstances the winter months are not sufficient; it requires an entire year for the child to catch up—unless Just's Food has been given, in which case it is only a matter of weeks, and the season makes no difference.

A New Biological Laboratory.—All visitors are struck with the magnitude and equipment of Parke, Davis & Co.'s new Biological Laboratory. The animal outfit consists of 1,000 guinea pigs, 200 dozen frogs and 50 rabbits; while there are about 80 horses. For pharmacological work an abundant supply of dogs, roosters, calves, etc., is always provided. The entire work of the biological and pharmacological departments is carried on under the direction of the best scientific talent obtainable. All this goes to show the immense pains which this firm takes to insure purity, accuracy and effectiveness in its preparations.

Sanmetto in Irritability and Inflammation of the Genito-Urinary Tract.—Dr. Shaver, of Jackson, Mich., recommends Sanmetto to the profession as an invaluable preparation in treating the above conditions. Dr. Worden, of Columbia City, Ind., had astonishing results in a case of gonorrhœa with epididymitis. And Dr. Sargent, of Bradford, Mass., asserts that it allays pain and inflammation when the ovaries and uterus are affected.

Paul Paquin's Serum.—Dr. A. G. Deardorff, of San Francisco, Cal., writes to Paul Paquin that he is more than pleased with his Anti-Tubercle Serum. He holds that not only is Paquin's Serum the best, but that his reasons for its employment and the results obtained therefrom are better than any he has seen.

An Efficient Intestinal Antiseptic.—Prof. William Henry Porter, in a clinical lecture, says that the number of intestinal antiseptics is almost legion; but among them all Ammonol is especially serviceable, particularly in those cases in which there is a tendency to headache. Ammonol also relieves the intestinal pains that are common in connection with digestive disturbances. The ammonia molecule, in connection with the Ammonol, is said to obviate any depressing influence that is met with in some of the coal tar products.

Valuable Remedies Worthy of Attention.—In the treatment of pulmonary diseases, tablets containing four and three-quarter grains of Antikamnia and one-quarter of a grain of sulphate of Codeine are worthy of attention. They are sedative in both acute and chronic diseases. Cough is promptly and lastingly relieved, and in the treatment of La Grippe they are highly esteemed. To administer these tablets, place one in the mouth, and allow it to dissolve slowly. In the various neuralgias this combination affords immediate relief.

Solid Comfort.—Major Charles N. Moore writes to Mr. Hanger that the artificial leg, which he has been wearing for the last six months, has been satisfactory in every particular. Although 64 years old he has ridden his wheel over 4,000 miles since he began wearing the leg, sometimes 50 miles in a day, and has felt no discomfort whatever. Although having worn artificial legs of different makes for over 33 years, Major Moore has never known solid comfort until he wore the leg manufactured by Mr. Hanger.

For Chronic Rheumatism.—Tartarlithine, in the experience of Dr. J. G. Denelsbeck, of Spotswood, N. J., gives the happiest kind of results in cases of chronic rheumatism. In patients of a gouty diathesis where there is a tendency to calcareous deposits, he finds Tartarlithine vastly superior to the salicylates or any other medicine. He says that this is the most welcome remedy that has come into his hands since he began the practice of medicine.

Irregular Menstruation in Young Women Due to Anemic Conditions.—Dr. H. Edwin Lewis, Burlington, Vt., Resident Physician Fanny Allen Hospital, contributes a valuable article to the Vermont Medical Monthly for August, 1897, in which, after describing the too often met with chlorotic girl, he narrates a series of cases of irregular menstruation in young women due to anemic conditions. To obtain a form of that specific—iron—which would be easily assimilable, and not hinder in any way the normal processes of digestion, assimilation and excretion, he employed Gude's well known preparation, the so-called Pepto-Mangan, or peptonate of iron and manganese, with the happiest results. The results of the original investigations as to the utility of Pepto-Mangan in the anemic state, due to a large variety of causes, which have been published by Dr. H. P. Loomis, of New York, Karl Von Ruck, of Asheville, N. C., and Dr. Hugo Summa, of St. Louis, Mo., are most convincing.

A Pure, Reliable Food Product.—According to Medical Progress, there is one article of diet that can be relied on whenever nutriment is needed for the invalid, a wheat preparation of absolute purity — the highly prized Imperial Granum. Dr. William Hooker Vail relates the case of a child with serious gastro-enteric trouble, in which this was the only food used, and in which the favorable outcome afforded ample proof of its utility. Another physician had a like satisfactory experience with two of his own children; and still another bears testimony to the value of this food product in the critical illness of a child. In all of these and many other cases the following facts are noted: first, that the patient had been unable to retain anything and had an exhausting diarrhœa; second, that natural and artificial foods had been administered without success, and third, that when Imperial Granum was administered it was retained, vomiting and diarrhœa ceased, and from the start the patient began to take on flesh.

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MEETING OF APRIL 21, 1897. Dr. S. C. Busey, President, in the Chair.

HEREDITY WITH VARIATION.

By D. K. SHUTE, M. D.

Questions of heredity and variation are cytological ones—that is, questions of the anatomy, physiology, physiological chemistry, and pathology of cells.

Every human body may be looked upon as a vastly complex pattern of living mosaics or cells. A cell may be defined as a nucleated piece of protoplasm of microscopic size. The nucleus is a thread forming a network with fluid in its meshes, and the protoplasm is a jelly-like substance of a reticulated character. Each thread of the nucleus consists of thousands of vital units.*

So far as the problems of heredity and variation are concerned, we may say that the life cycle begins and ends with the germ cell. Insects lay their eggs in old age; among plants the annuals flower but to die; in higher creatures the cessation of the procreative power marks the beginning of bodily decline.

Bearing in mind that the human body consists of two great classes of cells, germ cells and somatic cells, the following scheme will be found useful in discussing heredity with variation, viz:

Germ cell (portion of antecedent germ cell) { Stable (heredity). / Unstable (variation) { 1. Fortuitous causes. / 2. Toxic blood as a cause. / 3. Somatic causes.

Just in proportion as fertilized germ cells during the mitoses of ontogeny give origin, among the somatic cells, to other germ cells that are structurally, and therefore physiologically, like themselves, just to that extent do we have heredity; on the other hand, just to the degree that the new germ cells which are produced are unstable, to that degree also do we meet with variations.

Many of the causes bringing about structural changes in the delicate mechanism of germ cells are entirely unknown, and are therefore designated as fortuitous. Many other causes, such as poison circulating in the blood, can readily enough be appreciated.

The man or woman who makes use of such drugs as alcohol, opium, chloral,

*The author presented a most interesting resume of our knowledge of the minute structure of cell and cell life, for details of which see New York *Medical Journal*, September 11, 1897.

and such like, in an intemperate manner, contains these poisons in solution in the blood, circulating to every part of the body, and thus bathing and profoundly influencing the germ cells. In consequence of this fact an acquired and habitual intemperance will seldom fail to leave its impress upon one or more of the offspring, either like the original vice or one very closely allied to it.

And one of the saddest features of this great medical truth is that the hereditary units which are concerned in transmitting these grave abnormal tendencies may lie dormant in the germs of one generation, to become active in those of the next.

As to somatic causes—granting that structural changes in body cells can profoundly influence in some way the germ cells, and that therefore acquired characters can be transmitted—they are many and well defined. He then referred to food, and to use and disuse, in causing somatic changes, and pointed out very clearly the variability of individuals, and that heredity and variation are coextensive.

In speaking of inheritance he said at the outset we should carefully discriminate between heredity and pseudo-heredity. Physicians constantly write of tuberculosis, lepra, small-pox and syphilis as hereditary ; but it is incorrect and misleading to do so. When a person has syphilis, say, from the earliest existence—that is, from the fertilized ovum by transmission of a syphilitic microbe through the germ cells of the parents—this should be designated by its proper name as congenital bacterial infection. This is totally different from the hereditary qualities that flow from the structural equilibrium following the commingling and struggle for existence of multitudinous hereditary units.

The one set of hereditary qualities is purely germinal ; while the other is germinal, profoundly modified by the presence of an infecting microbe.

Many instances of infection of the child *in utero* have been reported in cases of endocarditis, scarlet fever and small-pox ; and there can no longer be any doubt, from experimental investigation and recent observation, that pneumococci, typhoid bacilli, anthrax bacilli and pus cocci are able to pass to the fetus through the placenta. But the diseases that develop in this way can be called hereditary with even less semblance of correctness than in the case of the fertilized ovum that is invaded with a microbe.

All of these cases are illustrations of pseudo-hereditary transmission and should, for the sake of clearness and accuracy, be spoken of as *prenatal* infections.

He then took up the subject of mental and moral heredity and gave a number of instructive illustrations, as also of the inheritance of physical peculiarities so obvious as to need no illustration, and referred to the fact that in the fertilized ovum heritages may be augmented, as where fleet horses are bred with fleet ones, until, by careful selection, generation after generation, a progeny may be secured much more swift than the original stock from whence they were derived, etc.

Again, at times, heritages may be neutralized ; they may be blended, as in the color of the skin ; they may be mutually exclusive, as illustrated in the color of the eye, or where the white game bird and black one are crossed, the young are either white or black, but never blended. Other heritages may be prepotent, as where the silky variety of fantailed pigeon is mated with any other small-sized variety of pigeon, the silkiness is invariably transmitted. A most inter-

esting case of prepotency in mankind, mentioned by Ribot, is that of Lislet-Geoffrey, an engineer in Mauritius. He was the son of a very stupid negress and an educated white man. In physical constitution he was as much a negro as his mother, he had the woolly hair, the features, the complexion and the peculiar odor of his race. He was so thoroughly a white man as regards intellectual development that he succeeded in vanquishing the prejudices of race, so strong in the French colonies, and in being admitted into the most aristocratic houses. At the time of his death he was Corresponding Member of the Academy of Sciences.

In this, it will be observed, we have prepotency in the mother's physical constitution, and in the father's intellectual characteristics.

The struggle of heritages in the impregnated ovum may lead to such structural changes of the nucleus, and therefore of the cell, as to develop the most marked variations—such variations as the biologists call sports.

In the latter part of the eighteenth century the farmers of Massachusetts had flocks of ordinary sheep on their farms. These sheep were continually jumping fences and getting on neighboring farms. They were the source of many disputes and much irritation between neighboring farmers. Finally, one of the sheep had a lamb which, when grown, displayed well-marked peculiarities (a sport). It had a longer body than the ordinary sheep and shorter legs, which were bowed. It was noticed that this sheep could not get over the fences. The cute Yankee farmer, noticing this valuable peculiarity, carefully preserved this peculiar sheep, and from it was ultimately derived, by careful selective breeding, a special variety known as the Ancon sheep.

The germinal variations resulting from the mixing of two separate hereditary masses by impregnation find their expression in the most varied qualities of the minds and bodies of developing children. If the variations are not especially marked, they are looked upon as normal and attract no special attention.

But if the variations are so pronounced as to compel attention and at the same time it is known that they are useful, they are spoken of as talents, or, on the other hand, if they are harmful or useless, they are designated as pathological or monstrosities.

These are truly what the biologist calls sports; and to those classes of sports that occur as specially gifted in human culture, in the varied fields of science, art or literature, we assign such a person as Shakespeare, and call the remarkable variations embodied in him genius. On the other hand, such variations as lead to certain forms of pigmentary degeneration of the retina, and to Daltonism, to dyschromatopsia and achromatopsia, to certain supernumerary glands, polydactylism, and such like, which are either useless or harmful, we designate as pathological cases or monstrosities.

Heritages may be latent—that is, they may appear late in life, or in the offspring, or, still, again, in remote descendants; in the latter cases, the heritages are spoken of as reversional or atavistic.

Latent heritages are well illustrated by a study of secondary sexual characters as developed at puberty.

Among our barnyard fowls, the hens often, when they have atrophy or degeneration of the ovaries, although up to this time they have laid eggs for years, stop this function, put aside the plumage and appearance proper to their sex, and

don more or less completely the garments of the rooster. Thus females have latent in them many secondary sexual characters of the male. For similar reasons the male develops, occasionally, female characters.

This latency is illustrated again in deer. In most species of the deer tribe the males alone possess antlers, yet it is a well-known circumstance that in females with degenerations of the ovaries, rudimentary horns that are never shed appear. A study of congenital color-blindness illustrates beautifully latent heritages, showing how the females of one generation may be free from the malady and the males of the next afflicted.

Much that is speculative and fanciful is included under the subject of atavism, and the safest plan for pathologists. in considering any abnormity, is to remember a golden rule of Gegenbaur's, that only those structures are reversional which are taxonomically not far distant or phylogenetically not very old. Embryology is also a very important check in considering such subjects.

In mankind supernumerary limbs and digits, microcephalia and micrencephalia, have been looked upon as reversions to the simian type.

Lombroso, in contrasting the criminal with normal man, looks upon his *homo delinquens* as an illustration of atavism, contrasting with *homo sapiens*. But, as Ziegler, in his *Pathology*, well observes, many writers have gone too far in this respect and have characterized as atavistic formations various acquired pathological formations and fresh variations of germ cells.

I think one can safely say that supernumerary ribs and those supernumerary nipples and mammary glands along the line of the deep epigastric and internal mammary arteries are truly atavistic structures ; also certain muscles normally belonging to those mammalia which come near to man in the scale of relationship, and which appear in man as muscular variations, are reversional.

Children are often born with pigmented hairy patches on their bodies known as moles ; sometimes these hairy moles are only of the size of a split pea, in other cases they are several square inches in area, while in rare cases almost all of the trunk may be thus covered. Although many similar pathological cases are often but marked variations called sports, yet the illustrations mentioned are undoubtedly reversional. Of the multitudinous illustrations of atavism that could be mentioned I wish to refer to but one more case.

The conjunctiva is a modification of skin and frequently proclaims its ancestry by reverting to its original form. It is by no means a very rare event to see a patient having a patch of hair-covered skin growing upon the ocular conjunctiva. While a clinical assistant at the Royal Ophthalmic Hospital in London I saw one such case, and Dr. Treacher Collins, the pathologist of that eye hospital, has stated that about twelve cases are seen there annually of this pathological condition, which is atavistic according to Sutton, although it seemingly violates Gegenbaur's rule about phylogenetic remoteness, and may be looked upon by some as a pathological illustration of a sport.

All heritages are derived directly through the germ cells. Can there be any heritages indirectly from the somatic cells through the germ cells ? In other words, can acquired characteristics be transmitted to the offspring? This question has given origin to the battle royal that is still going on between contending schools of biology. It is not my purpose to enter into this fruitful field

for discussion this evening. The contending parties have appealed to such biological evidence as is furnished by a study of use inheritance, reflex and instinctive actions in animals, etc., and to such experimental evidence as the induction of traumatic epilepsy in guinea-pigs, a change in the shape of the ear by cutting the cervical sympathetic, protrusion of the eyeball through injury to the restiform body, and such like, noting the effect on the offspring, and have drawn very different conclusions.

As to the transmission or non-transmission of acquired characters, some have maintained that only germinal variations are transmitted (because they believe the germ cells are insulated from the bodily cells, and therefore from somatic influences). For instance, Ziegler, in his work on *General Pathology*, says: "If a disease, such as nearsightedness, is the product of a special inherited predisposition, *plus* the effect of harmful influences which have acted upon the body during life, only that part can be transmitted which was received by inheritance, but not that part which was derived from external influences." In other words, there is no transmission of acquired character. In this belief it will be observed that he follows Weismann.

On the contrary, other investigators, like Darwin and Spencer, teach that somatic variations—the plus element in Ziegler's illustration of nearsightedness—do influence the germ cells (through some such agency as Darwin's theory of pangenesis suggests), and that, therefore, acquired characters can be transmitted. The question is one of fundamental importance, and yet no crucial experiment has been devised or fact observed which can compel the correct answer. The evidence seems to favor the view that acquired characters can be transmitted.

Professor Morgan, of England, has advanced the ingenious theory, which may reconcile the above-mentioned antagonistic views, that somatic variations, in the direction of adaptation, pave the way for germinal variations, so that, while somatic modifications *as such* are not inherited, they are yet the *favoring conditions* under which germinal variations are preserved by the great principle of natural selection. If this is true, as I think it is, then we can safely state that each man in his totality is the resultant of two great factors—heredity and environment.*

Heredity brings down to him the streams of tendency of former generations, often of a healthy and beneficent character, but still more often surcharged with lust and passion, and reeking with disease.

Environment is the co-operating and, to us, vitally important factor, inasmuch as it may supplement and thus re-enforce the hereditary tendencies, whether good or bad; or it may even tend to turn them into new channels, correcting the evil or vitiating the good.

Man is not simply a creature of the present, but profoundly a product of the past. Bodily structure, moral and intellectual tendencies, disease, vices and virtues are all in the marvelous stream of heritage that comes to him from the past. "Diseases that no facts in the individual life can account for point gaunt fingers of blame from one generation to another. Not a murderer is hung, not a daughter starts on the downward way, but a great company, like those who were present at the stoning of Stephen, stand by inaugurating and consenting to the ruin."

Truly has it been said that the past is at work in the present, its powers reaching down through the ages, to all the race,

* Environment is the sum total of the external conditions of life, such as food, water, climate, occupation, character of civilization, state of morals in society, ideals and examples most frequently seen.

largely moulding every human life, touching and influencing every individual's thought and will, and, more than any other force, coloring history.

Studies in heredity illustrate most luridly that the continuity of the human race is a terrible but remorseless reality.

If the ignorance and the perverted pleasures of one generation may produce the vices and the crimes and the diseases of another, a question of tremendous import arises: Is heredity as potent in the direction of virtue and health as of vice and disease? At the first look one is almost tempted to answer Nay! for the most striking examples of heredity seem to be in the direction of evil. But this is perfectly natural. Decay is always more rapid than growth. A cherry rots much more quickly than it ripens. Vice and disease spread much more quickly and widely than virtue and health. But all history and all social and medical science teach that vice and disease carry within themselves the seeds of decay, and virtue and health the seeds of endurance and growth.

Through the great Darwinian principle of natural selection, or survival of the fittest, vice and disease will become less and less predominant, and virtue and hygienic constitutions more and more disseminated.

As influencing a man's life and character, which is the stronger factor, heredity or environment? Fatalism or choice? In my own opinion, as the result of long study and reading, where we have a man of "*mens sana in corpore sano*," environment will be the stronger factor whether for good or for evil—that is, in men in general, who have no organic defect, such as insanity or idiocy, and allied affections, the stronger force is environment; but in those having such defect, heredity is the controlling power, and, I may add, the destroying power.

In order to understand the normal actions as well as the abnormal ones of the members of society, and in order, therefore, to understand and inaugurate rational methods of conducting education, minimizing pauperism, vice, disease and crime, it must be borne in mind constantly that two great streams of tendencies have come down from the ages in the germ cells—what I may call the diseased and animal tendencies on the one hand, and the distinctively human and healthy tendencies on the other.

The most characteristic of the human tendencies are abstract thought and reflection, and therefore the power of choice or will, and altruism.

Also it must be borne in mind that environment is a force of commanding influence. This environment (which the individual may make for himself to a large extent) may be propitious or adverse to the best human and normal tendencies. The relative preponderance of the animal or the human, the healthy or the diseased tendencies, taken in conjunction with the character of the environment, stamp man's actions as normal (and therefore right or wrong) or as abnormal, and therefore as irresponsible.

Not to discriminate between such normal and abnormal persons is not in accordance with either common morality or common sense.

DISCUSSION.

Dr. C. H. A. Kleinschmidt: Heredity is the simple fact that certain properties and characteristics of the parents are transmitted to the offspring, and there is not only hereditary transmission of anatomical, but of physiological and psychological properties, and in each of these directions the transmitted result may be normal or pathological. Our modern ideas of heredity are one and all hypotheses, and thus do not differ from the old theories which dominated the eighteenth and part of the seven-

teenth centuries; but they are superior to them because based upon many important and fundamental facts and have thus brought us nearer to the solution of the problem. The fundamental facts are: That ovum and sperm cell are simply cells, separated, excreted from the parent organism for the purpose of reproduction; that in sexual reproduction, these two cells by intimate union and fusion lay the foundation for the development of a complex organism; that the developed organism is an aggregation of innumerable cells produced by repeated division of the fecundated ovum; that, as clearly shown by Dr. Shute, the intricate processes of maturation and fecundation are always accompanied by regular, orderly changes in the nuclear substance; that the materials supplied by the ovum cell and sperm cell, *i. e.*, the male and female nuclear substances, are equivalent in every respect and transferred to the daughter cell, which then becomes a true hermaphrodite. The fecundated ovum, resulting from fusion of the materials supplied by two cells, is itself a complete cell, with cell body and nucleus, but like all other cells, and more than any of them perhaps, is an exceedingly complex organism, composed of innumerable minute particles. This structural complexity, although it cannot be demonstrated with the highest powers of the microscope, contains all the conditions required to bring about the real product of the process of development; or, in other words, the reproductive cells contain hidden properties and peculiarities by which the final result is made possible; the organism, so to speak, being represented potentially in the fecundated ovum, the molecular complex of the germinal substance containing all its inherited properties. Mathematically speaking, the developed organism may be regarded as a complicated function of the molecular mechanism of its germ.

In the ovum stage all organisms resemble each other, and apparently the ova of man and animals show no difference; in fact, the difference between them is, as far as we can see, less than that between sperm cell and ovum cell of the same species, yet there are essential differences, for as man differs from a dog or any other animal, so his reproduction cells must differ from those of other animals in essentials of structure and physiological properties. And although the ovum and sperm cell of the same species appear quite dissimilar, each must contain those essential qualities which form the structural and physiological basis of the developed organism. Thus organisms in the form of their reproductive cells are no less distinct than in their fully developed condition, and the chicken's egg contains the species as completely as does the chicken, and is as different from the frog's egg as the chicken is from the frog. (Naegeli.)

Upon these hidden properties of the reproductive cells rests the fact of heredity, and all modern theories are based upon conceptions of the molecular structures, etc., of what has variously been called germ plasm, idio-plasm, hereditary material; *i. e.*, the substance containing the properties of the developed organism to be transmitted to the offspring.

It is interesting to find that the opposing theories of Preformation and of Exigencies, which contended for the mastery in the seventeenth and eighteenth centuries, reappear as the leading theories of to-day in greatly modified and modernized forms.

One school holds that the fecundated ovum contains the rudimentary or primary constituents of the cells, tissues and organs of the body, and that growth and reproduction are the progressive automorphosis of existing germs, and are largely independent of surroundings. Segmentation, therefore, is a qualitative process, inasmuch as each blastomere represents a definite part of the adult. (This is refined preformation, according to which, as held by Hailes, every part of the organism existed, preformed, in the ovum in a transparent and therefore invisible condition.)

The other school holds that the fertilized ovum is isotropous, one part, no matter how complex, being like every other part, and growth is largely the result of reaction of the living substance to external influences. In support of this, we have the experimental fact that

the blastomere of a segrementing ovum, when shaken apart, form dwarfed organisms, *i. e.*, organisms containing all parts of the animal in a dwarfed condition, but in which there is no absence or loss of any one or more parts. According to this, segmentation is a quantitative process, and all divisions of the ovum are primarily alike, and the living substance is able to produce the different parts by differentiation. But while thus each isolated part may produce the whole organism, in the normal state the parts react on each other and produce the resultant individual. There is no predetermination in the germ cells or the segmented ovum, and the morphological and physiological differentiation occurs later in embryonal life, the prospective character of the cells being determined by the influence of surrounding cells and physical and chemical conditions. It is all a function of location. (Hartwig.)

Whichever theory we may adopt, we find, as the essential part of both, that both parents supply equal parts of hereditary material, and, according to Hartwig, and this view is also, as we have seen, accepted by Dr. Shute, the nucleus, or better, the chromatic substance of the nucleus, is the bearer of the hereditary properties, the actual germinal substance, and contained in the nuclei of the ovum and sperm cell. As stated by Dr. Shute, this thread material or chromatic is not a simple, but a complex substance, as it must necessarily be to contain and transmit the hereditary properties from parent to offspring. We thus hold that from both sides of descent an equal mass of material is transmitted, and it is through this that a certain number of physical and mental characteristics pass from generation to generation. While most modern biologists ascribe the power of transmitting the hereditary material to the nuclear material, some, like Verworm, maintain that the view, according to which the protoplasm of the cell body contains no material necessary for transmission, and that the so-called tail of the spermatozoon is simply a locomotor organ, cannot be accepted; but that there is transmission of the entire metabolism, which determines the character of the cell, and this is only possible when nuclear substances and protoplasm with all their metabolic relations are transferred to the daughter cell.

Now, all characteristics are not always transmitted, and the more special ones are often not transmitted to the next generation, but pass from grandparents to grand or great-grandchildren. In other words, certain characteristics may remain latent in one generation and reappear in subsequent generations. This is atavism or reversion, and it thus occurs that children often resemble their grandparents and possess properties lacking in their parents, and many peculiarities may suddenly reappear after having been latent for generations.

One of the most interesting questions is the inheritance of acquired characters, and it has given rise to very considerable discussion. As in sexual reproduction, all transmission is through germ plasm, the question is, whether the hereditary substance can be so influenced by the cell or structures of the organism as to lead to somatic peculiarities in the offspring like those acquired by the parent. Many, *e. g.*, Darwin, Haeckel *et al.*, maintain the affirmative and base upon it their theories of variation. Others, with Weismann, hold that the germ plasm in the adult can never reflect the acquired characteristics of the adult and therefore cannot transmit them. Weismann's experiments on mice, undertaken to prove the non-transmission of acquired properties are well known; his tailless mice produced in all cases tailed offspring through a number of generations. It seems to me that he might have spared himself the trouble of experiment, for we all know of circumcision, which has been practiced for thousands of years among eastern nations, and yet the offspring are never born without a prepuce; and although the Chinese tightly bandage the feet of their female children from early infancy, and have done so for numberless generations, their girls are all born with normal feet.

Brown Sequard and Obersteinn produced artificial epilepsy in guinea pigs by operating upon the nervous system, and epilepsy appeared in the offspring; but, although this looks like hereditary

transmission of acquired properties, yet in no case was the mutilation itself transmitted; the offspring was feeble, sickly, with abnormal nervous and nutrient symptoms, and a tendency to epilepsy. The experiments on mice, etc., by no means prove that acquired properties may not be transmitted. It is *a priori* unlikely that such mutilation would be transmitted, for it is not probable that the parts are so related to the sexual cells that their mutilation would influence them, and this is a prerequisite to transmission. To decide the question experimentally, the mutilations must be made on parts correlated to the sexual cells, and as yet but few such correlations are known to us; for instance, that between the larynx and the sexual organs.

I believe, although the question may not be considered as entirely settled, that acquired properties may be transmitted, as seem shown by the fact that hereditary resemblance is more absolute, that the child is never the exact image of his parents, physically or mentally, but that there is variation, which may be acquired after fertilization or birth, and be due to environments, or to congenital, inherent in the germ plasm. Take, for example, the case mentioned by Dr. Shute, the Bach family, in which musical genius of the highest order was transmitted through many generations. The first Bach, a plain man, was very fond of music. The second had a greater fondness and aptitude for it, and so it went on increasing through several generations to culminate in the great John Sebastian, with the very acme of musical genius.

On the other hand, great men have produced mediocre sons, and men of ordinary ability have been fathers of eminent sons.

While, indeed, in many cases of what appears to be transmission of acquired properties, another explanation may be found, *e. g.*, atavism, and while the transmission thus may be germinal from the first, and not due to influences of the soasetoplasm on the germ plasm, yet a sufficient number remain in favor of transmission of acquired properties and the production of variations thereby. But in all such cases, the essential differences lie in special peculiarities, and the general characteristics, transmitted through long generations, whether congenital or acquired by an ancestor, are in their essentials transmitted to the offspring. The real change is so slow that we hardly notice it even in many generations, and the similarity of animals found in old Egyptian tombs to those of to-day is evidence that real changes are long ages in developing. So that heredity is the essential cause of the preservation of once existing peculiarities of form. As to inheritance of disease, I fully concur with Dr. Shute, that it is very doubtful whether pathological characteristics acquired by the parent and not inherent in his germ cell, can pass to the child, although a diseased parent may produce a feeble offspring, or one predisposed to the parental disease, and the offspring may develop it; but here the disease simply finds in the enfeebled body a favorable object for attack.

As to transmission of infectious diseases, in many cases there may be simply inherited predisposition, yet we now know that the micro-organisms may be transmitted, either by ovum or sperm, or by way of the placenta, but neither of these processes are comparable to inheritance in the customary sense, and belonging to what Dr. Shute has aptly styled examples of pseudo-heredity.

One word as to maternal impressions, not touched upon by Dr. Shute, but by Dr. Kober. In expressing any disbelief in the possibility of maternal impressions, I run against some decidedly strong opinions of medical men and others. Undoubtedly events occurring to the mother previous to fecundation are able to influence the product of a subsequent conception by influencing the nutrition of the ovum, and the ovum may certainly be impressed by the nervous system of the mother, which, by acting upon the germ cell as it does on other cells, may modify its nutrition and properties and thus influence the offspring. But it is generally asserted, that after conception, and even at an advanced stage of pregnancy, and even in the later months of gestation, emotional states on the part of the mother, or cerebral impressions may leave their imprint upon the fetus. This, I take it, is not probable. True

the mother influences the fetus by supplying nutritive material, but this is in an amorphous, not organized form, and there certainly is no direct nerve connection between the mother and fetus in utero. It is hardly conceivable that external accessory characteristics such as the color of the hair, nævi, anatomical defects, etc., can be produced directly through influences exerted by the mother upon the fetus during its development. I believe that most of the cases where congenital deformities are seen in the newborn may be accounted for by mechanical injuries to the fetus *in utero*. Dr. Kober has reported a case where the mother, living in the far west, while pregnant, went some ten or fifteen miles over a rough country road to have a tooth extracted, and her child at birth had a defect of the jaw. This was evidently a case of agnathia, and, according to Winkel, such cases, representing a defective development of the lower maxilla, are due to mechanical injuries during gestation. If that infant cited by Dr. Kober had had a missing tooth, corresponding to the one extracted from the mother, it would be a more plausible example of maternal impression.

As far as I am concerned, the mother's imagination does not act in the production of these anomalies, but very frequently is employed in discovering or devising an explanation of their occurrence.

Dr. Mary A. Parsons: Generation is not a creation of life—it is merely a presentation of life to the senses. Life—all life—consists of invisible force rendered visible by that process known as creation, or, in other words, this visible creation is a vast system of invisible force visibly organized. Herbert Spencer has said: "Man is ever in the presence of an Infinite and Eternal Energy from which all things proceed," or, as it has also been said: "The root of all Being is the Absolute," and as might well be said, the Absolute consists in that which cannot be crowded into the field of the microscope.

The old notion of ultimate and indivisible atoms is fictitious, and we now form no idea of an atom, or nucleus, apart from its inhering energy. What we call matter is resolvable in its last analysis into points of dynamic force. The channel by which this force is presented to our senses, to be translated by our thought centers, is through the vibration of intermolecular ether—that all-pervading, interpenetrating agent of which we know so little. The ancient sages regarded ether as the "dominating necessity, intermediary between the world of sense and the sphere of causes." They describe it as neither earth, air, fire nor water, nor any of their compounds or elements, but as a form or condition invisible, unshapely, and partaking of the Higher Intellect, and as the passive recipient, or matrix, of creative force. It denotes the transition element between the real and the apparent, the eternal and the contingent, and is the condition or medium necessary for the production of every created thing.

Canillo Galgi, in this last year, affirms that all the special senses have end organs upon which the vibrations of ether impinge, to be presented as shape, color, smell, etc. Also that these end organs modify the character of these vibrations so they may be forwarded by the special nerves of the center of the brain where sights and sounds are received and stored, and from which impulses originate.

Individual thought and action send vibratory waves through the medium of ether, and in turn these resultant vibratory waves impinge upon cell action, and modify structural growth. In other words, regular or irregular vibratory action will react upon the polarity of cell arrangement, and modify physiological structure. Any cause which disturbs either the equilibrium of force or the regularity of the vibratory waves will produce physiological reaction.

It is well known how emotional disturbance affects every physical function, as also that functional derangements often can, and sometimes do, lead to structural disorders. Nor is it reasonable to expect that faulty cells shall reproduce perfect cells, neither is disturbed vibration likely to be transmitted as healthy rhythm. Our bodies receive from our habits a modification, often a complete change, of appearance, and as

the "fatalities of our lives are written externally in our wrinkles," so are they recorded internally in our diseases.

Dr. Frank Baker: It will be well for me to clear up a little of the obscurity which must arise from the various synonyms used in the discussion. The units we have been talking about are given different names by different authorities, as follows: pangenes by Darwin; physiological units, by Spencer; micellæ by Nageli; idioblasts by Hertwig; and biophores by Weismann. Dr. Shute talks about pangenes, Dr. Kleinschmidt of idioblasts, and I talk of biophores, but they all mean essentially the same thing. These units, which we believe to be the essential functional elements, are supposed to be aggregations of molecules. The order is like this: atoms are the units of chemic action; molecules, of physical action; and biophores of biotic action.

There is a growing distrust of Weismann's theory of heredity, which I think arises mainly from its great complexity. The idea that there are certain aggregations of molecules which produce the phenomena of cell life is not new. Weismann, however, supposes that these aggregations or biophores not only exist in every cell of the body, but that special combinations of them produce the essential physiological characteristics of the different cells. These combinations he calls "determinants." Thus there is one determinant for a skin cell, another for a gland cell, a third for a bone cell, etc. But that is not sufficient; he goes farther. To account for heredity he holds that at a certain stage of development each determinant of the body undergoes division, the fragments forming two groups, one of which goes to the germ cells and the other to the body or somatic cells. Those in the germ cells form still higher combinations each of which contains determinants from all parts of the body. These he terms "ids." Thus Weismann completes our series of consecutive aggregations as follows:

Atoms produce chemic action.

Molecules produce physical action.

Biophores produce biotic action.

Determinants produce special function.

Ids produce hereditary transmission.

Each of these groups is built out of the units of the previous one.

Now this is a beautiful theory, and its plausibility has charmed many.

Let us see what a little wholesome criticism will do for it.

According to this theory a fecundated ovum must contain within it all the determinants necessary to form the complete individual, and the process of segmentation is merely a sorting out of these for distribution to the different parts of the body. If a separate portion of an ovum could be separately developed it would form a fragment of the adult body. This, however, is not the case. Wilson and others have clearly and repeatedly shown that if, during the first stage of the segmentation of the ovum, the segments are shaken apart, there results, not an arrest of development, not the formation of a fragment of the animal, but two distinct and perfect animals smaller than the normal size.

We have not time to-night to consider all the other theories put forward to explain heredity. Each physiologist has his own, none being entirely satisfactory. We must remember that these aggregations of living matter, these biophores, are themselves in constant active motion. As we see the planets moving in certain definite paths controlled by gravity, we conceive that the biophores move in certain definite paths controlled by their own attractions and repulsions. If these are interfered with, in their course, by any extraneous forces, special results will ensue.

The question of maternal impressions has been mentioned. In considering this I am inclined to think that we somewhat hastily assume that the only paths for transmitting impulses throughout the body are those of the nerve fibers. It seems to me highly probable that most of the cells of the body may in some degree communicate impulses to each other, and that when these are very strong, or, if weak, are continued over considerable spaces of time, that definite results may follow. The phenomena of shock are certainly better explained in this way than by nervous action. In this way it may be possible to transmit

impulses from the mother to the fetus. I would not positively deny the possibility of maternal impressions because we cannot show any nerve connection between the body of the mother and that of the fetus.

In regard to the transmission of disease to the fetus, Dr. Shute would not, I think, claim that it had been actually proved that there is a microbic cause of syphilis. We can hardly demonstrate that at the present time, though it is extremely probable.

Certain experiments in the vegetable kingdom show that plants may be definitely changed in character by mere association with each other. For instance, the apple tree grafted upon the quince becomes dwarfed ; it will bear apples, but the tree is completely changed in character. This seems to be a point against the theory of Weismann and in favor of the interference theory which I have mentioned.

Dr. Kober, in closing the discussion, said : Dr. Shute's paper has treated a very obscure subject as clearly as the nature of the subject would permit, and I regret that his did not precede my own.

Dr. Kleinschmidt's objections to the theory of maternal impressions have been well presented, but Dr. Baker has pointed out the possibility of their occurrence otherwise than through direct nerve connections. When we consider how complex the nature of a cell really is we can appreciate that vibrations may be sent from the brain of the mother to the fetus *in utero* without direct nerve connections. At all events there are a number of authentic cases on record in which maternal impressions have resulted in abnormal cell formation.

Dr. D. Kerfoot Shute, in closing the discussion, said : It gave me great pleasure to listen to Dr. Baker's criticism of Weismann's theory—a theory over which I worked very much two summers ago.

As to pseudo-heredity through the transmission of bacilli from the mother to the germ cells, I must confess that my memory fails me somewhat. I believe this has been demonstrated in tuberculosis or syphilis, but I do not now remember which.

MEETING OF JUNE 9, 1897.

Dr. S. C. Busey, President, in the Chair.

OLD FRACTURE OF THE SKULL.

Dr. W. H. Forwood, U. S. A., presented a specimen consisting of a portion of the right frontal, parietal and temporal bones, showing a fissure with rounded sloping edges running forwards horizontally across the temporal and frontal bones; it was 2.25 inches long, and in width varied from a mere chink to 3-8 inch and was partly closed at the bottom. A little new bone on intracranial surface. The subject was a soldier, age 62; had seen 21 years service. When about 15 years old was struck in right temporal region with a rail; was unconscious for 10 days, after which he recovered with a large scar. His general health remained good ; he enlisted and was in service as stated. In 1886 he showed mental weakness and aberration which passed into dementia and occasional epileptic spasms; April 1, 1897, had erysipelas of right lower limb with fever; he improved at first, but died on the 15th. The necroscopy showed beneath the fissure a soft, gelatinous mass extending about one inch into the brain ; both frontal lobes softened. The thoracic and abdominal organs were normal except for several gallstones which had given no symptoms during life. The repaired lesion had lasted therefore 47 years.

In this connection Dr. D. S. Lamb showed a skull having a linear depression 3 inches long extending obliquely across the frontal bone from the middle line to near the external angular process; irregular sloping sides ; floor of fissure nearly closed. The specimen was bought because of its excellent showing of repair after serious injury apparently from a

saber or other cutting weapon of large size; but there is no history. There are other points of interest about the skull, especially the immense left jugular process with an articular surface on its free end with which it must have articulated with the transverse process of the atlas. Whether this was congenital is a question, although it looks much that way.

THE THURE BRANDT SYSTEM IN GYNECOLOGY PRACTICALLY APPLIED.

By Sofie Nordhoff-Jung, M. D.

In a paper read before this Society two years ago I tried to show that gynecological massage is a logical, rational and essentially conservative method of treatment and one without any danger to the patient. Since then I have had ample opportunity to apply this method in private practice, with results so satisfactory that I am more in favor of it than ever.

The most brilliant results are in overcoming adhesions, the importance of which is only too well known to the gynecologist. According to the latest researches, there exists a circulus vitrosus between perimetritis and parametritis. Schultze is of the opinion that chronic pelvic peritonitis rarely occurs without affecting the subperitoneal connective tissue. Inflammatory processes, acute as well as chronic, which have their origin in the paramentrium, cause almost invariably pathological products on the free surface of the peritoneum. Therefore we find often in one case parametritic scars, peritonitic exudates, agglutination of surfaces and pseudoligaments.

Whatever the cause of the adhesions may be, we must appreciate a method of treatment which alone is capable of restoring parts to their normal condition. German gynecologists have devised several modifications of the Thure Brandt method. Saenger of Leipzig performs what he calls interrupted massage; he secures the uterus by means of a volsellum forceps and in turn masses with the finger in the vagina and draws down the uterus. Chrobak puts his patients to bed, attaches a traction apparatus to the uterus, thus stretching the adhesions.

Duhrssen modifies Chrobak's method and places the patient upon the Thure Brandt couch, raised at the foot end, a volsellum is put into the cervix and this is attached to the end of the couch by means of a firm rubber band. The patients remain in this position for twelve hours at a time. He reports 17 cases thus treated; 9 were cured, 7 improved and 1 was a failure.

It has been stated repeatedly that an accurate diagnosis is necessary before resorting to massage, and yet nothing facilitates a correct diagnosis more than this method. After the parts have been treated by analgesic massage for a few minutes they are much less sensitive, and ovaries and tubes, which could not be felt at first, are distinctly palpable. This fact is well recognized and the Germans speak of a "palpatory massage" or the combined method of examination of Thure Brandt—Duhrssen. It is considered far superior to the examination under anæsthetics.

Before proceeding to report some cases treated by this method I would like to mention a paper by Dr. Monad published in the *Ann. de la Policlinique de Bordeaux*, No. 35, Nov. 1896. The Doctor gives an interesting account of his "conversion." Several years ago when reading of Thure Brandt's method of treatment he ridiculed and even abused Brandt and his followers. During a trip to Vienna he witnessed a number of cures in Chrobak's clinic, who were treated by pelvic massage

only. Among them were some cases of frequent micturition, without any disease of kidneys or bladder, but due to uterine displacements. He pronounced the results marvelous. Upon his return to France he secured the services of a skilled physician to whom he entrusted 11 cases of frequent micturition which he reports as being cured in from 10 to 25 séances.

It is needless to add that with such results the Doctor has become an enthusiastic believer in Thure Brandt's treatment.

DISCUSSION.

Dr. Joseph Taber Johnson said: This subject has been discussed in this Society and elsewhere pro and con, and literature is rapidly increasing. Reeves Jackson, as early as 1880, reported a reduction in size of a uterus enlarged by sub-involution brought about by "uterine massage," and the report shows that he employed practically the same method as that of Brandt. He placed the patient in the position described by the essayist; thus relaxing the abdominal walls he was able to get hold of the enlarged uterus with his hand, and was able to squeeze it and pinch it and roll it until he got it reduced to its normal size.

Boldt, in 1889, read a paper in which he gave a description of his experience with the Thure Brandt method. Vineburg, in 1893, read a paper on the same subject, which was published in the *Am. Journal of Obstetrics*, and Rymph, of Chicago, in 1895, read a paper before Chicago Obstetrical Association.

In properly selected cases the method gives great benefit, and those who claim that harm has resulted from its application probably owe their bad results to an improper selection of cases. The essayist says that the diagnosis can be made as we go along, but others say it should be made beforehand. To a certain extent this latter contention is correct, for cases have been reported in which pelvic massage has resulted in the rupture of a pus tube, and in the rupture of an extra-uterine pregnancy. Leaving out of consideration the damage done in improperly selected cases, the good results far overbalance the harm done.

Practically most of the cases which Dr. Nordhoff reports as cured by this treatment, were cured by the relief of long-standing constipation, by the repair of lacerations of the cervix and perineum and by leaving off injurious customs. I believe, however, that the essayist is right in saying that the Thure Brandt method has resulted, and will result, in preventing some meddling operations. If the crowning glory of womanhood is motherhood, then the crowning glory of gynecology is in making motherhood possible. This method has this decided advantage, that if it fail to cure no organs have been removed, and an operation can be done afterwards. In one of the cases of disease of the ovaries reported by Dr. Nordhoff, if these had been removed, as was suggested, she would have got well without her ovaries, whereas by massage she got well and was able to retain these organs and to have children afterwards. I have been using the method for some time, and with considerable success, but I will not say that in any case a cure resulted from the massage alone, but I think it aided a good deal in the cures. At all events it has saved several ovaries, and it also saved some operations for the shortening of the round ligaments, or ventral fixation.

One objection to the method is the length of time it takes to learn it. Those who have written on the subject say it is impossible to learn it thoroughly without months of study. Some time ago the French Government (not the Academy, but the Goverment) became interested in the subject and sent a surgeon to Brandt to study his method, and after six months study he returned and made a partial report, and later went back to Stockholm where he spent a year and a half more studying under Brandt before he mastered the method.

Dr. J. Wesley Bovee said: If such results can always be obtained by the Thure Brandt method it should become the most important factor in the treatment of pelvic diseases.

I think, however, that the question of

diagnosis in the beginning is really very important, and one upon which we cannot lay too much stress. There is evidently great danger in such manipulations in cases of pelvic pus and other conditions such as dermoid cysts. In cases of long standing the uterus is generally bound down by a dense mass of adhesions. If they result from puerperal septic peritonitis they are especially so, and often cannot be separated by the fingers, requiring scissors for their division. Ofttimes the adhesions will hold and the intestine give way instead. Yet it is claimed for this method that it will cure these conditions in a few sittings. If it will do this it is certainly the best thing that has ever been proposed. I believe these adhesions are not broken up by these manipulations, but that they are merely lengthened out by the manipulations, and will shorten up again. Duhrssen and others who have been using this method are abandoning it, and going back to surgery.

In many of the cases of retroversion of the uterus the real difficulty is in the appendages. They have been the seat of inflammation and have become adhered after dropping low in the cul-de-sac. They carry the uterus with them.

In other cases there is merely a venous congestion of the appendages, and in these cases excellent results follow curetting. Massage is probably better for such cases. The case of epilepsy related is certainly an interesting one, and I think the treatment was the best for the case, and should be tried in other similar cases. The case of enlarged uterus extending nearly to the umbilicus and receding to practically its normal size under the treatment in a few weeks seems almost miraculous. This method should be combined with other methods of treatment. Massage will tone up the relaxed ligaments and cause an absorption of pelvic exudates, thus relieving constipation.

MEETING OF JUNE 16, 1897.

Dr. S. C. Busey, President, in the Chair.

The Society adopted a resolution that the Editing Committee be instructed to complete the publication of the Transactions so as to have it up to date by January 1, 1898, and that the Society pay for the extra pages necessary to such work.

Dr. D. S. Lamb presented the following pathological specimens:

I. Ulcerative endocarditis with resulting acute septic peritonitis; the peritonitis being probably due to the entrance of septic organisms into the lymphatic circulation by way of the ulcer.

II. Fibrous myocarditis. From a woman said to have died of Bright's disease. The condition is not common. The heart is much enlarged; the transition from normal muscle structure to fibrous tissue is well marked. The condition is apt to cause aneurism of the heart.

III. Sloughing of left tonsil and adjacent tissues with possible entrance here of septic organisms into the circulation and resulting general infection as shown by rise of temperature, subpleural ecchymoses and hemorrhages into renal pelves.

IV. Cancer of stomach in a woman only 20 years old. She was in hospital nearly seven weeks. Three months before her admission she had pain in right side and choking sensation after meals. Emaciation progressive. When admitted, the abdomen was much distended; she had nausea and vomit—both which continued until death. She had also intense and persistent lumbar and abdominal pains. The abdomen was aspirated twice and much fluid removed. There was diarrhœa for a few days. The temperature was scarcely above normal. Pulse and respiration frequent. The necroscopy showed among other pathological conditions recent adhesions in abdomen, also many old adhesions, between stomach and liver, around spleen, between the intestines, and in the pelvis.

The peritoneum everywhere was thickened. The stomach was much contracted, thickened and near the pylorus, ulcerated. There were several nodules in the pancreas.

V. Extroversion of abdominal viscera and spina bifida. The placenta has been preserved and is adherent directly to the amnion, and the amnion adherent directly to the peritoneum. The external sexual organs are absent and the sex cannot be determined without opening the peritoneal sac. The sac of the spina bifida is quite large. The fetus is about 7 months old.

VI. Varicose aneurism of neck. There is a sacculated aneurism of the left common carotid artery at its bifurcation and a dilatation of the corresponding internal jugular vein to two inches in diameter. The artery and vein communicate above and the sacs are filled with old and recent clot. The arterial sac had ruptured into the surrounding tissue, forming there a false aneurism filled with recent clot. The larynx and trachea have been much displaced and distorted by the pressure and their lumen narrowed.

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Original Articles.

THE U. S. ARMY MEDICAL SCHOOL, WASHINGTON, D. C.

BY C. H. ALDEN.

The following account of the U. S. Army Medical School has been written at the suggestion of the Editors of the NATIONAL MEDICAL REVIEW that such a paper would interest its readers, and has been prepared the more willingly as members of the profession in this city have been helpful to the school in many ways. It is but proper that they should know more about it.

That the young medical officer requires special training needs no explanation when his future duties are considered. He is already, of course, a graduate in medicine and has had experience in a civil hospital, but it is important he should study the diseases, the wounds and injuries to which the soldier is specially exposed, the surgery of the battlefield, the care and transportation of wounded, the management of a hospital, the control, care, drill and instruction of his hospital corps, the examination of recruits and the many details of Army business and routine necessary for successful work. Lastly, it is necessary he should be prepared for his duties as the health officer of the post or command to which he is attached, the importance of which will be at once recognized.

This necessity for military medical instruction has been recognized for many years by the principal European nations and even by some of the lesser ones. Thirteen army medical schools are known to be now in existence. These schools are of two classes: First, those in which the pupil or candidate receives a general professional education as well as a special training for the medical staff, partly or entirely at the expense of the State. He receives the civil degree of Doctor of Medicine during this course of instruction, which is necessarily an extended one, lasting a number of years. The military medical schools of Germany, France, Russia, Turkey and Mexico are examples of this system.

Other army medical schools, and the greater number, are purely post-graduate schools. In these the young medical officers, either appointed or on probation, are already graduates in medicine, and at the military medical schools are taught military medicine, surgery and hygiene, and trained in their special duties as members of the medical staff. The British Medical School at Netley is the best-known school of this class but those in Sweden, Switzerland Italy,

Spain, Greece, Japan and our own country are of the same character.

The U. S. Army Medical School in this city, therefore, is a post-graduate school, taking up the newly appointed medical officer's education at the point where the medical college and civil hospital leaves it and covers in its curriculum a different ground. It dates from June, 1893, when Surgeon General Sternberg, almost immediately upon his entering on his office as head of the medical corps, appreciating the necessity for such a school, recommended its establishment to the Secretary of War, who issued the necessary orders. Its professors and instructors are medical officers who are stationed in Washington or vicinity and are already assigned to other duties. Its students, as already intimated, are, chiefly, recently appointed medical officers. The vacancies in the medical department that have occurred during the preceding twelve months are filled in October of each year when a medical examining board for the examination of candidates is convened in this city. The successful competitors are usually enough to fill the vacancies, and, numbering from five to eight, are at once appointed assistant surgeons and ordered to report to the President of the Army Medical School for instruction. Assistant surgeons of longer standing and service are also admitted to the school if stationed sufficiently near to attend or if they obtain a leave of absence from their stations for that purpose.

Beginning its session on the 1st of November, the session lasts until April 1, its duration having recently been extended from four to five months. At its close, the members of the class are ordered to their first posts, generally west of the Mississippi.

The school occupies convenient rooms in the Army Medical Museum Building, corner of Seventh and B Streets S. W., consisting of a lecture-room, a chemical and a microscopical laboratory, special library and a faculty room.

The faculty consists of a president, who lectures on the duties of medical officers, and four professors, their chairs being Military Surgery, Military Medicine, Military Hygiene, and Clinical and Sanitary Microscopy.

Instructions in litter and ambulance drill and first aid is given by a junior medical officer on duty at Washington Barracks.

Some more detailed account of the subjects taken up in the lecture and laboratory courses is necessary to an understanding of the work accomplished.

The Professor of Military Surgery, after a brief historical resumé of the subject, takes up modern military weapons and projectiles, describing and illustrating their effects on various tissues and in different regions of the body and the appropriate treatment of the injuries produced; of hemorrhage and shock; the emergencies of the battlefield; transportation of wounded; military hospitals, etc. Careful training in operative surgery is given. Weekly surgical clinics are held at the Barnes Hospital, Soldiers' Home.

In the course of Military Medicine, the subject is first taken up from a historical point of view, and then the conditions which specially affect injuriously the health of soldiers and produce the diseases most prevalent among them on the march, in camp and in garrison, are discussed. The more important of these diseases, chiefly those caused by a specific germ, are then taken up in detail, with special reference to their characteristics as found in Army practice.

The Professor of Military Hygiene, after a review of the history of sanitary science treats of the usual divisions of

that important subject, but with reference particularly to military life, as the site and plan of camps and permanent posts; personal cleanliness and physical training; the warming, lighting and ventilation of barracks; medical climatology, an important subject in our extensive country; discussions on air and water and their impurities, with best methods of removing them; the methods of removal of sewage, with special reference to Army conditions; and lastly, the Army ration, its food value and proper preparation.

The lecturer on the Duties of the Medical Officer endeavors both by didactic instruction and practical exercises to give the student officer some acquaintance with the actual work before him. Beginning with an explanation of the nature and necessity of military discipline, the position, duties and rights of the medical officer are discussed. The student is instructed and trained practically in the examination of recruits and in making sanitary inspections of military posts. The regulations referring to medical attendance are explained, and practical exercises are given in making out certificates for sick leave and certificates of disability for discharge. He is told what he is to do as commander of the hospital corps detachment in providing for and instructing and disciplining his men. Malingering and its management is then taken up. The medical officer's duties in the obtaining, properly caring for and accounting for medical supplies and other public property, in the administration of the hospital, in securing repairs and overseeing construction, in the field and in camp, are described.

As will be seen by the schedule of daily duties at the end of this paper, a lecture is delivered at 3 o'clock each week day except Saturday, but that the greater part of the day is spent in the laboratories. The laboratory instruction is a most important feature of the school.

The Professor of Clinical and Sanitary Microscopy gives the student officers practical instruction in bacteriological technique and in the character and culture of the more important pathological micro-organisms, so that they may be able to use the laboratory apparatus provided at every military hospital for the prompt recognition of these germs, necessary to their duties as practitioners and sanitarians. Microscopical examinations of the blood, sputum, urine, morbid growths and of the processes of inflammation then follow.

In the chemical laboratory subjects specially important for the health officer are taken up, some preliminary general instruction in chemical manipulation being given. The analysis of air, water and foods and the detection of the more common poisons are then studied. The chemical composition of the fluids of the body is also examined.

In addition to the lectures and exercises in the regular curriculum, auxiliary lectures are usually given as follows: On military law, by Lieutenant-Colonel Davis, Deputy Judge-Advocate General; on mental diseases, at the Government Hospital for the Insane, under the direction of the Superintendent, by Dr. George W. Foster, assistant; on the Army Medical Library, by Dr. Robert Fletcher, F. R. C. S., Washington, and on parasites in man, by Prof. C. W. Stiles, Ph. D., of the Agricultural Department. The lectures and instruction outside the regular courses have been of great interest and benefit to the class, and the thanks of the faculty are due the gentlemen who have given them valuable aid.

The instruction in litter and ambulance drill and first aid given at Washington Barracks has already been alluded

to. This takes place Saturday mornings early, and later the class goes over to Fort Myer, Virginia, for instruction in riding.

The session of the school now in progress is the fourth that has been held, and at its close twenty-four newly appointed medical officers will have been trained therein. In addition, some four or six older medical officers have each year availed themselves of some part of the instruction, chiefly the laboratory courses. During the session of 1896–7 several officers of the National Guard were in attendance upon the lectures.

One of the means of improvement connected with the school, but not part of the official work, is the Army Medical Journal Club, which meets fortnightly during the session. Its members are the faculty and students of the school, and medical officers stationed in and near the city. Members are expected to prepare abstracts of interesting articles in the medical journals of all languages to which they have access in the library, and are called on in turn to read them. The subjects taken up are then discussed.

The establishment of the school has been amply justified by the results. Not only have its graduates gone out to their duty better prepared for the work before them, but have in many cases become instructors to those at detached posts who had not had like advantages. Not only is the school of great value for the knowledge imparted and training given, but the work there gives him a stimulus toward still greater and constant improvement.

APPENDIX.

The Faculty of the School, as organized in 1893, was as follows:

President and Lecturer on Duties of Medical Officers: Assistant Surgeon General C. H. Alden.

Professor of Military Surgery: Deputy Surgeon General W. H. Forwood.

Professor of Military Hygiene: Surgeon J. S. Billings.

Professor of Military Medicine and Director of the Chemical Laboratory: Surgeon Charles Smart.

Professor of Clinical and Sanitary Microscopy and Director of the Pathological Laboratory: Assistant Surgeon Walter Reed.

Instructor in Hospital Corps Drill: Assistant Surgeon J. M. Cabell.

The following changes have occurred:

Deputy Surgeon General Forwood has been promoted to Assistant Surgeon General.

Surgeon Billings was promoted to be Deputy Surgeon General, and afterwards retired in October, 1895. The Chair of Military Hygiene thus made vacant was taken by Major Smart, and Deputy Surgeon General D. L. Huntington was appointed Professor of Military Medicine October 15, 1895. Surgeon Smart has since been promoted to Deputy Surgeon General.

Assistant Surgeon J. M. Cabell, Instructor in Hospital Corps Drill and First Aid, having been relieved from duty at Washington Barracks, was succeeded in October, 1895, by Assistant Surgeon F. R. Keefer, and he in turn for a like reason was succeeded by Assistant Surgeon G. D. De Shon now on duty.

ORDER OF DAILY DUTIES.

SESSION OF 1897–'98.

Beginning November 10, 1897, *Ending April* 1, 1898.

Daily, except Saturdays, Sundays and holidays: 9 A. M. to 12 M., instruction in Pathological Laboratory; 1 P. M. to 2.50 P. M., instruction in Chemical Laboratory; 3 P. M., lecture.

Saturdays: 9 A. M. to 10.15 A. M., instruction in Hospital Corps Drill and First Aid at Washington Barracks, D.C.; 11 A. M. to 12 M., instruction in Equitation at Fort Myer.

There are no exercises on Sundays, Thanksgiving Day, December 25 to January 1, inclusive, and Washington's Birthday.

The lectures will be delivered as follows: Duties of Medical Officers, Wednesdays; Military Surgery, Thursdays; Military Medicine, Mondays; Military Hygiene, Tuesdays.

Hours for instruction in Operative Surgery and Optometry will be announced hereafter.

Auxiliary Lectures.

Military Law, Lieutenant Colonel G.B. Davis, Dep. J. A. Gen., March 21 to 25, 1898, inclusive.

Mental Diseases (Clinical), at Government Hospital for Insane, Washington, alternate Fridays, beginning November 19.

The Army Medical Library, Dr. Robert Fletcher, F. R. C. S., Eng., Monday, January 24, 1898.

Parasites in Man, Professor C. W. Stiles, Ph. D., Department of Agriculture, dates to be hereafter announced.

Due notice of any change of program will be posted on the bulletin board.

WALTER REED,
Major and Surgeon, U. S. Army,
Secretary of the Faculty.

PUERPERAL FEVER.—SYMPTOMATOLOGY AND DIAGNOSIS.

BY HENRY D. FRY, M. D.,
Washington, D. C.

I. Puerperal fever, in the majority of cases, develops from the third to the fifth day after childbirth. The onset may be delayed until the second week and, exceptionally, it manifests its presence before or during labor. The latter is more likely to follow premature evacuation of the waters, and early digital examinations made without antiseptic precautions. The period of incubation is from forty-eight to seventy-two hours.

The clinical picture varies from an attack of so-called "Milk fever," which portrays the mildest type, to an outburst of grave infection overwhelming the patient and terminating rapidly in death. The manifestations depend upon the character of the infective agent or agents, and whether the venous or lymphatic channels convey the poison into the system. Different characteristics are also impressed upon the course of the affection by various secondary and inflammatory complications. To avoid confusion no effort will be made to consider these gradations; nevertheless, at the outset, it is of primal importance to recognize two varieties. These must be considered and clearly differentiated symptomatically as the prognosis and treatment differ accordingly.

In one form, the germ does not penetrate into the living tissues but produces putrefactive changes in foreign matter retained in utero. This matter is blood clots, decidual membrane or placental tissue. Ptomaines are generated and absorbed into the blood, producing febrile reaction. In grave forms of putrid infection the germs may gain access to the circulation, producing disorganization of the blood and profound depression, terminating in death.

In the other form, more often representing streptococcus infection, the germs invade the maternal system and are transported to continuous and even distant organs.

Temperature elevation, with its concomitant symptoms, first attracts attention. Chilly sensations or distinct rigors may

or may not precede the fever. The fever curve is often erratic and the recurrence of chills suggests a malarial complication or the presence of pus. The countenance bears an expression of anxiety, physical depression is marked, and the pulse acceleration great. The affection runs no self-limited course but terminates in recovery or death after variable periods of duration. In mild cases recovery usually takes place in eight or ten days. Attacks prolonged over two weeks are, as a rule, accompanied by some secondary conditions. A favorable termination is by the gradual reduction of temperature to normal with a corresponding improvement of the general and local symptoms. Exceptionally the disease ends by crisis.

In severe cases the skin presents a sallow hue, the breath has a sweetish odor, the mind is dull and a typhoid condition develops. In the absence of inflammatory complications the local symptoms may be slight or wanting. The lochial discharge is diminished or arrested, and in the first of the two varieties mentioned it has the disagreeable odor indicative of putrefactive changes. In the second form, and this is a point of vital importance to bear in mind, *the lochia has no disagreeable odor*. Lacerations of the perineum or vulvar opening present an unhealthy appearance, ulcerations may be detected here or within the vagina, the cervix is often lacerated, œdematous, and presents the appearance of raw beef, and pseudo-membranous deposits may take place over the surface.

The involution of the uterus is retarded, the organ is enlarged and sensitive on pressure. In the second week of the puerperium it not uncommonly drops backward, producing an obstruction of the cervical canal by flexion and an aggravation of the trouble.

Inflammatory complications of the adnexa yield the usual clinical evidence.

II. A correct and early diagnosis of puerperal fever is of great importance, as valuable time is otherwise lost before instituting proper local treatment. A safe rule is to consider all cases of fever occurring soon after childbirth as septic in nature and treat them as such until the diagnosis be confirmed or disproved Careful local treatment will do no harm if the diagnosis be in error, while prompt local measures may save an otherwise hopeless case. This is more particularly true of the insidious and more serious type, in which local symptoms may be absent and the lochia presents no disagreeable odor. Delay means the penetration of germs beyond our reach and the fight is then between the patient and the invading host.

The following case recently came under observation and accentuates this point. A multipara was delivered after an easy labor. The first days of her puerperium were normal in every respect, and on the morning of the seventh day the pulse and temperature were 58 and 98°, respectively. The same evening her pulse was 70 and temperature 101°. During the succeeding eight days the fever curve ranged from 99 to 105.8°, when the disease terminated fatally. Until three days before death her pulse did not reach 100, and her appearance did not indicate a serious condition.

Examination of the genitalia had been negative; there were no lacerations or ulcers at the outlet or cervix; the vagina was not inflamed; the uterus was not enlarged or sensitive, and the lochia was absolutely without odor. Antiseptic vaginal and intra-uterine douches produced no effect. Bacteriological examination by Dr. Carroll demonstrated the presence of streptococci in the uter

ine cavity and distant organs—liver, spleen, etc.

In arriving at a diagnosis of puerperal fever, the history of the labor may shed some light on the subject. A fever is more likely to be septic when the labor has been tedious, severe and much manipulation necessary. Artificial extraction of the infant or placenta or the birth of a macerated fœtus add to the danger of infection. A rapid pulse and marked physical depression early in the attack favor such a diagnosis. Important evidence is gained by local examination. Swelling of the tissues of the vaginal orifice, puerperal ulcers and unhealthy appearance of perineal tears, inflammation of the vagina with thin discharge, soft, œdematous cervix, enlarged and ulcerated, a patulous cervical canal, an enlarged tender uterus, scanty or suppressed lochia, with or without odor, marked abdominal tenderness, tympanitic distension, fixation of the uterus and inflammatory exudates in the broad ligament indicate an extension of the disease to the adnexa and peritoneum.

Bacteriological examination of the uterine secretions obtained with a sterilized cotton swab not only gives conclusive evidence of infection but also of its variety.

Diagnosis is aided by the exclusion of symptomatic fever, malaria and typhoid. The breasts should be carefully examined by the physician himself for mastitis and abscess. The condition of the digestive organs demands attention. Constipation, indigestion or an overloaded stomach may simulate a beginning septic fever. Mental emotions, as fright or anger, sometimes induce febrile reaction in the puerperal woman. Tonsilitis, bronchial catarrh or a deep-seated pneumonia may be overlooked and the accompanying fever attributed to sepsis. The development or aggravation of tubercular disease after childbirth is not infrequently mistaken at first for puerperal fever. During the prevalence of epidemics of la grippe acute febrile reaction may follow childbirth and closely resemble acute sepsis. The prominence of headache, myalgia and catarrhal symptoms, with the absence of local indications of infection, ought to point to a correct diagnosis.

When malarial intoxication occurs before or during pregnancy, its manifestations are held in abeyance until after confinement. Intermittent fever may develop at any time of the puerperium, or the fever may be continuous and erratic, with intermissions showing marked periodicity.

Unusually large doses of quinine are demanded to control the disease under these conditions. A fever occurring during the puerperium and showing an absence of the features of septic fever may be thought to be malarial when the previous history favors that view; as, for instance, former attacks of the disease and residence in a malarial section.

In making a differential diagnosis, two points should be kept in mind, viz: the facies of the patient and the character of the pulse. In sepsis, even of mild type, the expression of the patient is generally pinched and anxious. In malaria, complicating the puerperium, the patient does not look or seem very sick, although the temperature be high. In malaria, the rapidity of the pulse is not in proportion to the height of the fever. With a temperature of 103° the pulse may be 90. In sepsis, a temperature of 101° may be accompanied by a pulse of 120. The demonstration of the plasmodium in the blood is conclusive evidence of malarial fever, but one must bear in mind the possibility of a mixed infection and not too hastily exclude septic poisoning.

Typhoid fever not uncommonly occurs

during the puerperium. At first it may be difficult to make a differential diagnosis, but the absence of positive evidence of local infection and the development of the abdominal symptoms of typhoid will finally clear all doubt. The blood examination is a valuable test after the first week, and possibly earlier.

TREATMENT OF PUERPERAL SEPTICÆMIA.

By A. F. A. King, M. D.,
Washington, D. C.

Not until the doctrines of Holmes (1845) and Semmelweiss (1847), together with the demonstrations of antiseptic surgery, had given birth to the antiseptic era in obstetric practice, can it be said that the treatment of puerperal septicæmia had any logical or scientific foundation. It may well be questioned whether the various methods of treatment before that time were useful, useless or detrimental.

With the advent of the antiseptic epoch came intelligent prophylaxis and successful methods of cure, so that now under the modern treatment of the disease by antiseptic cleansing of the parturient canal and support of the patient by food, alcohol and other cardiac stimulants, about four-fifths of all cases recover, while under the old régime the mortality was frightful.

What *is* this "modern treatment"? I need not dwell upon *prophylaxis*. Its paramount importance is too well known to need any farther accentuation at this time. It simply consists in protecting the puerpera from infection by the same rigid antiseptic *technique* that is observed in surgical practice. In fact, every midwifery case should be considered a surgical case. If there be any difference between the two, it is that the obstetric case requires a *more* rigid antisepsis than the surgical one, for in obstetrics the *results* of infection are more *fatal* than in surgery.

Infection having once occurred, and no matter what may be its exact nature, whether sapræmia, septicæmia, or pyæmia (one, more, or all); and whatever the *kind* of infecting microbe, in *all* cases, one element of treatment is invariable, viz: *the strength of the patient must be supported by food and stimulants* to counteract the pronounced general depression that inevitably occurs with every case of septic infection.

Of *foods*, milk, meat juices and extracts are best. These should be given at regular short intervals, whether desired by the patient or not, and in quantities smaller or larger, as the stomach will bear; the more, the better.

Of *stimulants*, whisky or any other liquor (provided it be of *good quality*, a matter sometimes overlooked), may be given with water or with milk, or varied in the form of eggnog, at short intervals and in quantities (one, two or more tablespoonfuls) to be determined by the *degree* of general depression. So long as the pulse continues *frequent and feeble*, give more. In bad cases, one pint, or several pints, may be required during 24 hours; even then, the enfeebled heart may need an occasional extra lift from strychia, strophanthos or nitro-glycerine administered hypodermatically.

The various methods of disinfecting the genital canal by irrigation with antiseptic solutions of corrosive sublimate, carbolic acid, creolin, lysol and the like, as well as the removal of decomposing matters by the finger and curette, are familiar to all.

In no case is the good effect of this treatment more immediate and pronounced than in those of simple sapræ-

mia ("putrid intoxication"), due to absorption of ptomaines produced by decomposing remnants of placenta, membranes, blood clots, etc., in the uterine cavity. A thorough disinfection of the uterus by antiseptic irrigation, after removing all tangible masses of offensive material by the finger or curette, is often followed by a complete cessation of symptoms and rapid convalescence, provided the disinfection have been complete, and that the patient be not already overwhelmed by a fatal quantity of ptomaines ("*septicæmia acutissima*"), when, in spite of any treatment, she will die as from any other virulently malignant infection.

In other (and, nowadays, the more common) cases in which the patient is poisoned, not so much by ptomaine products of putrefaction as by infection with living microbes (chiefly streptococci) that have found their way into the genital passage and thence into the lymph channels and blood vessels, disinfection by antiseptic irrigation will still be *absolutely necessary*, and the good result, while evident beyond question, will not be so *directly* effective as in sapræmia cases and will require more frequent (daily or bi-daily) repetition for a considerable time. While antiseptic irrigation with proper precautions is desirable in all cases of septic infection, the same cannot be said of the finger or curette. In cases of uterine phlebitis, in which the veins of the placental site are plugged with infected blood clots, the finger or curette would be likely to displace these infected thrombi and start them off in the blood current to lodge and become infecting emboli in distant organs, with consequent metastatic abscesses and pyæmia. Even irrigation in these cases will, for the same reason, require extremely gentle manipulation.

In any case, after the uterine cavity has been disinfected by irrigation it should receive a suppository of iodoform or a gentle packing of iodoform gauze, the latter to be removed in 24 hours.

It is scarcely necessary to add, for this goes without saying, that in any method of cleansing the genital passage the vulva, vagina and uterus should receive successive attention in the order named. No one would commit the blunder of passing a finger or instrument into the uterus without having first disinfected the vulva and vagina.

Now, while these two comparatively simple measures of (1) *local disinfection* and (2) *support of the patient by food and stimulants* have probably saved more cases of puerperal septicæmia than all other remedies combined, quite recently, or within the last few years, a still more promising and, perhaps, more strictly scientific remedy, has been devised, viz: *antistreptococcic serum* (*streptococcic antitoxin*). From the cases reported (now quite numerous), the almost immediate effect of this drug in *reducing temperature and alleviating all other bad symptoms*, appears nearly marvelous. But it is yet too soon to jump at conclusions.

In all cases these marvelously good results have *not* been obtained. Still the outlook is brilliantly promising for this new remedy.

The serum was, I believe, first prepared by Dr. Alexander Marmorek, at the Pasteur Institute of Paris (hence known as "Marmorek's Serum"); later it was made at the "British Institute for Preventive Medicine," in England, and now it is manufactured by Parke, Davis & Co., of Detroit; Gibier & Co., of New York, and others in this country.

It is administered hypodermatically (the skin and syringe having been previously rendered aseptically clean) in doses of from 5 or 10 to 20, 30 or 40 cubic centimeters. The dose will depend upon the strength

of the preparation, and for *this* the practitioner must rely exclusively upon the statement of the manufacturer. One full dose may be given daily, or several smaller doses twice or thrice daily. The usual result, viz: reduction of temperature and amelioration of other symptoms, is manifest within 24 hours, or even sooner. If the serum be omitted the temperature again rises and other symptoms return, to be again immediately relieved when the serum is repeated. Some cases go on to rapid convalescence after one or two days' treatment, but most cases require the serum to be continued for many days—even several weeks—before convalescence is established.

It is of the utmost importance that the serum therapy should begin *early* in the case before the local lesions have gone on to the formation of abscesses or other portentous disorganizations of tissue.

Again, it has been amply demonstrated (as might have been supposed) that the streptococcic antitoxin is only effective in streptococcic infection. In cases of mixed infection the results are less favorable. Hence arises the necessity of a bacteriological diagnosis which, however, requires time (at least 24 hours), skill and apparatus not usually available by the general practitioner. This is a serious drawback, especially in localities where no bacteriological laboratory is at hand. Perhaps it will be overcome in future by our learning to differentiate the various kinds of infection by *clinical symptoms*, which we have not yet learned to do.

In cases of pure sapræmia, the antistreptococcic serum would, of course, be useless and injurious, and from its tendency to produce hematuria, it would be inadmissible in cases with decided renal complication.

In a few instances serious symptoms of collapse have followed the injection of antitoxin; even *fatal* collapse has been ascribed to it, in one or two cases, whether justly or not future experience must determine.

In any case, when the serum is being used, stimulants, food, antiseptic cleansing, etc., must be used with it. We cannot yet trust to it alone.

At the present date the best that can be said of the serum treatment is that it is pregnant with promise. Time and experience must determine whether it will save *more* than the four-fifths of cases that recover under disinfection and support.

Treatment by *nuclein*, given to increase the number of leucocytes and thus aid phagocytosis, while still *sub judice*, is much less promising. In fact, recent experiments seem to render it extremely uncertain whether the white elements *are* increased by nuclein. It may be given in two-grain tablets of proto-nuclein every 2 hours, or a 10 per cent solution of nuclein may be injected hypodermatically in doses of 10 minims, gradually increased until 60 or 80 minims are given daily. No one has ventured to depend on nuclein to the exclusion of the well-established remedies first above mentioned.

Another comparatively new remedy, viz., *hypodermoclysis of normal salt solution*, while again supposed to promote leucocytosis, is probably more effective in eliminating ptomaines by its rapid excretion through the kidneys. One, two or three pints may be passed into the subcutaneous cellular tissue, preferably in the submammary, subclavicular or gluteal regions by means of a large exploring needle and fountain syringe or some similar device, always, of course, under rigid antiseptic *technique*. The subcutaneous method is more safe and easier of execution than intravenous injection,

though some prefer the latter. The solution may also be given by rectal injection. Further experiment is necessary to demonstrate its individual value.

Finally, with the recent rapid evolution of abdominal surgery has come the removal of the uterus and other diseased organs and the opening and cleansing of the peritoneal cavity, together with operative procedures of less moment, according to the lesions that may be present.

The limits of this paper make it impossible to consider the various methods of treatment, medical and surgical, proper for the different phases and stages of the very numerous lesions liable to attend puerperal septicæmia.

From present experience there is every reason to believe that many cases of abdominal peritonitis, especially those in which the peritoneal cavity has been invaded by streptococci, and consequent pus development, would be saved by an early resort to cœliotomy and flushing out of the abdomen with sterilized water or normal salt solution.

So, again, in cases of puerperal metritis, in which the deeper structures of the uterine wall are invaded with infecting microbes, and its tissues are deeply involved with suppurating foci, ulceration, sloughing, etc., an early resort to hysterectomy offers the only hope of saving life.

The trouble is and will for some time continue to be that these formidable operations are not often discovered to be necessary and not always consented to when found to be necessary until it is too late to save life by any means. In most instances such operations have been done as a last resort and last hope and usually with fatal result. On the other hand, when they have been resorted to *early*, recovery has followed in a sufficient number of cases to demonstrate their utility in saving life, and this, be it especially noted, in cases where all other known means of cure would be necessarily futile and hopeless.

The employment, perhaps I should say the *enforcement*, of surgical measures for the relief of the lesions of puerperal septicæmia is a difficult problem for the future, which, however, when solved, bids fair to produce a brilliant recompense in the saving of otherwise hopeless cases.

SUGGESTIONS FOR THE IMPROVEMENT OF TWO CLINICAL INSTRUMENTS.

By Andrew Stewart, Ph. D.,
Washington, D. C.

Of the numerous ingenious instruments designed for the estimation, in urine, of urea from the volume of nitrogen liberated on decomposition with hypobromite of sodium, that suggested by Professor Doremus has been most generally adopted for clinical purposes. The ease, simplicity and, above all, the rapidity of its manipulation, rendering immediate the end result of an otherwise tedious analytical process, strongly recommend its use to the practitioner. As, however, its construction includes no provision for correcting variations in the volume of nitrogen consequent upon change of temperature, atmospheric pressure, height of column of liquid, etc., etc., its readings are but widely approximate and, therefore, liable to mislead.

Such incidental errors may be overcome by a very simple expedient.

If, after each determination of urea, in urine, a like operation be performed with a solution of urea of known strength, the same (cleansed) pipette being used, it is clear that variations, of whatsoever

origin, will affect the volume of nitrogen given off from the urinary urea and that from the control solution exactly alike. Then, by the employment of a simple equation, the true volume of nitrogen (and from that the true percentage of urea) can be calculated.

The control urea solution may be made up at the temperature at which the instrument happens to be calibrated, or, in fact, at any mean temperature, as the variation in volume of the liquid, due to thermal changes within the range of temperatures usual in laboratories and the ordinary atmospheric pressures, is slight enough to be disregarded. It should be of a strength to give average readings on the scale of the instrument—say 2 per cent, or 20 grams per litre—and should contain a drop or two (per 100 c. c.) of strong phenol solution, as a preservative against bacterial onslaught.

The writer has further found that, by filing the needle of an old hypodermic syringe short off, fitting over the stub of its base a short piece of rubber tubing, into which a pipette of about 5-16 inch inside diameter, with a well-curved beak, may be inserted, a very acceptable injecting instrument is constructed, which, by its steadiness of application, guards against all losses of fluid and the sucking back of hypobromite, liable to occur from the nervous uncertain grasp of the fingers on the bulb pipette heretofore in use.

The technique of the determination is as follows:

Draw back the syringe piston a trifle (in order to allow sufficient residual play for injecting the last drop of urine); draw in the urine and eject down to the 1 c. c. mark; introduce the curved beak well into the neck of the Doremus and inject slowly and steadily. Stand the instrument aside for 20 minutes; read off and note the volume of nitrogen. Now, invert the instrument, allowing the gas to escape, repeating, if necessary, until all subsequent bubbles have been similarly disposed of. Remove the pipette tube from the syringe barrel, wash with water, rinse it out with the control solution and perform the operation therewith exactly as just described, not forgetting to again allow 20 minutes to elapse before the reading is taken.

Then—

Urine

ought to be : actual reading ::

Control Solution

ought to be : actual reading

x : y :: 20 : z

An example may possibly not be out of place.

In one case coming under the writer's observation during the hot weather of last June, for instance, the reading for the urine was 20.5 grams per litre; corrected, it read but 17.83 grams per litre. The reading for the urea solution was 23. Under the conditions subject to which the instrument was calibrated, it should have been 20. Then—

$$20.5 : x :: 23 : 20$$

$$\frac{20.5 \times 20}{23} = 17.83 \text{ grams per litre.}$$

There was, therefore, an error in the original reading of 2.67 grams per litre.

The above expedient insures correction for variation in temperature, atmospheric pressure and (partly for) change in height of liquid column operating directly on the volume of nitrogen gas, as well as for uncertainty of manipulation, and thus places the instrument on an equal footing with those of its class heretofore more accurate.

The writer has further a device to suggest, which he has found endows the hæmometer of v. Fleischl with a much more general range of employment. It

consists essentially of a wooden box 8¼ inches long by 4 inches wide by 4¾ inches high, inside measurement.

Fig. 1.

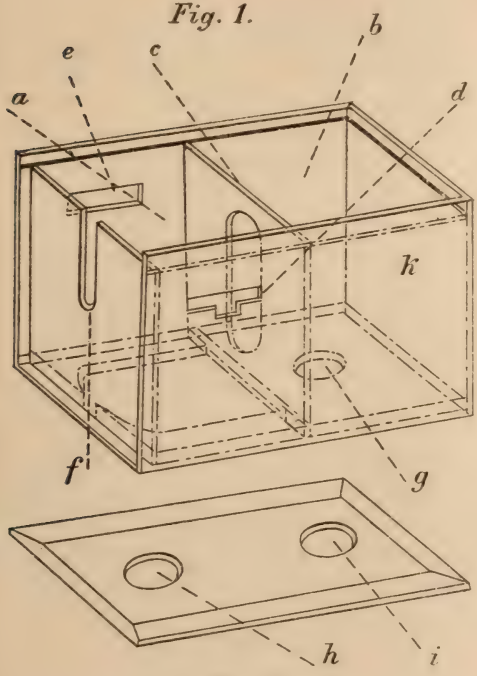

Fig. 2.

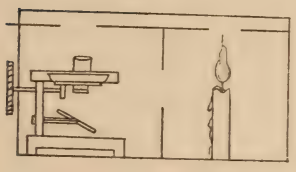

Figure 1 gives an outline drawing of the box, while Fig. 2 presents a rougher idea of it in cross-section. It is separated into two compartments, *a* and *b* (Fig. 1), by a thick pasteboard partition, *c*, supplied with a vertical opening in the center, about 1¾ by ½ inches, covered over with tissue paper. In compartment *a* the hæmometer is fixed, its slide being subsequently inserted through the aperture *d*, and playing back and forth through it and the opposite aperture *e*. The shaft of the actuating screw protrudes through the opening *f* in the sliding front.

In compartment *b* stands the candle (fixed in the socket *g*) whose light, modified by passage through the tissue paper-covered opening of the partition, is reflected on and from the gypsum mirror.

Observation of the instrument is made through the aperture *h* in the sliding lid, the eye being assisted by the employment of a (pasteboard) cylinder about 12 by 1½ inches in size, while the heat and fumes from the candle escape through *i*.

It is well to protect the under side of the lid with thin asbestos paper and to paint the inside distal end, *k*, of the box white, the balance of the interior being black.

This apparatus is designed particularly for bedside work in private practice, where it is often impossible to secure a room sufficiently dark for the purpose. It has been found to give excellent results even in the brightest daylight if care be taken that the *side* of the box be turned toward the direction from which the light comes, and it would be well to shade *i* somewhat with a book. A raised collar round both *h* and *i* would be an improvement.

ADDENDUM.—Dr. Alden calls the attention of the REVIEW to the fact that recently a prize gold medal fund was founded by Major J. Van R. Hoff, Surgeon, U. S. Army, in memory of his father, a medical officer in the War of 1861–5. This medal, of the value of forty dollars, will be awarded annually to the student officer who shall have attained the highest standing, and it will be presented to the successful competitor at the closing exercises of the school.

The National Medical Review.

GEORGE W. JOHNSTON, M. D.,
AND
THOMAS E. McARDLE, M. D.,
EDITORS AND PUBLISHERS.

WASHINGTON, D. C., January, 1898.

"A correct and early diagnosis of puerperal fever is of great importance, as valuable time is otherwise lost before instituting proper local treatment. A safe rule is to consider all cases of fever occurring soon after childbirth as septic in nature and treat them as such until the diagnosis is confirmed or disproved. Careful local treatment will do no harm if the diagnosis be in error, while prompt local measures may save an otherwise hopeless case. This is more particularly true of the insidious and more serious type in which local symptoms may be absent and the lochia presents no disagreeable odor. Delay means the penetration of germs beyond our reach, and the fight is then between the patient and the invading host."

These sentences, which occur in one of the original articles for the current month, teach a principle of great value and wide application. It is always wise to regard any fever that develops in the puerperal woman within a reasonable time after delivery as septic in nature. However atypical the fever, however obscure the other symptoms, however probable the existence of malaria or typhoid, the most likely cause and the most dangerous cause is sepsis, and this should never be forgotten. The theory as to the nature of the fever, the diagnosis upon which our treatment is based, should be founded upon our fears. Apprehension and dread are often our best advisers; they lead us before and during labor to exercise the most minute precautions to obviate the danger of infection; after it, they prepare us in ample time to meet the worst.

But it is not only in the puerperal state that apprehension is a wise councilor. In all affections of whatsoever nature that are frankly grave from the beginning we know that active steps are immediately necessary if we wish to preserve health or save life. But as long as diagnosis remains in doubt, all cases of illness should be regarded as serious and be treated accordingly. It is always best to consider a doubtful case a bad case. It is neglected disease that soon becomes unconquerable disease; and apprehension, which always leads us to anticipate the worst and prepare for it, is like the forethought of the great strategist von Moltke, who, because he was prepared to meet a greater emergency than actually materialized, overthrew an empire and altered the map of Europe in thirty days.

Since, through the action of the Medical Association, a plan has been put in operation in this city to control the dispensation of medical charity, there has been a most extraordinary falling off in the number of applications for outdoor relief. It would be interesting to discover if there has been anything like a corresponding increase in the amount of business done by physicians generally and especially by the younger men, or if the poor and ignorant, failing to consult anyone in sickness, do not suffer additional and unnecessary hardships. There are many broad questions affected by this new system; and it is to be feared that in our effort to prevent a few of the unworthy from receiving medical advice and treatment without charge, we may unwittingly increase the burdens and the sufferings of the poor and seriously imperil the public health.

Notices and Reviews.

DISEASES OF THE STOMACH.—By John C. Hemmeter, M. B., M. D., Ph. D., Clinical Professor of Medicine at the Baltimore Medical College. One vol., 788 pp., cloth, $6.00. P. Blakiston, Son & Co., Philadelphia, 1897.

This is by far the most complete and satisfactory book dealing with diseases of the stomach. Every phase of etiology, pathology, symptomatology, diagnosis and treatment is elaborately presented. The sections upon the examinations of the stomach contents are particularly interesting, and the subject of diet is discussed in a more thorough and scientific manner than in any work with which we are acquainted. Dr. Hemmeter is to be congratulated upon his masterly achievement, to whose success the beauty of the illustrations and the elegance of the presswork contribute not a little.

DISEASES OF THE EYE.—By Edward Nettleship, F. R. C. S. Revised and Edited by W. T. Holmes Spicer, M. A., M. B., F. R. C. S. Fifth American from the sixth English edition. With a supplement on Color Blindness by William Thomson, M. D. 521 pages, with two colored plates and 161 engravings. Cloth, $2.25. Lea Brothers & Co., publishers, Philadelphia and New York, 1897.

The wonderful success of this work, which has passed through the press six times in Great Britain and six times in America, is a proof of its value, and Nettleship has come to be a well-known and honored name to all practitioners and students of medicine. The present volume has been thoroughly revised in this country, and Professor Thomson's section upon color blindness is a most valued addition. "In its new edition the reader of this work will therefore find an epitome of the best ophthalmology of the Old and New Worlds."

THE CARE AND FEEDING OF CHILDREN.—By L. Emmett Holt, M. D. New York: D. Appleton & Company, 1897.

This valuable little catechism, for the use of mothers and children's nurses, has been revised and enlarged by its eminent author. We believe that this second edition will be even more popular than the first, which was issued three years ago. Every mother and nurse would profit by its lessons.

SURGICAL DIAGNOSIS AND TREATMENT.—By J. W. Macdonald, M. D., Professor of Surgery, Hamline University. Cloth, $5. Half Morocco, $6 net. Philadelphia: W. B. Saunders, 1898.

Professor Macdonald has succeeded in giving the profession a surgical work devoted principally to the study of diagnosis and treatment of surgical diseases and injuries. It is a book which can be safely recommended to students, who will find in its pages all the valuable differential diagnostic points and the best modern methods of treatment. To practitioners of medicine and surgery it will prove a reliable book of reference, for it represents the most recent surgical knowledge.

BIENNIAL REPORT OF THE DEPARTMENT OF HEALTH OF THE CITY OF CHICAGO.—Chicago, 1897.

This very complete report has been received and is herewith acknowledged.

Therapeutic Notes.

From the Vatican.—Dr. Luigi Salucci, Physician to the Holy Apostolic Palaces, Rome, says he has given Bromidia with success as a remedy for insomnia, especially when produced by excessive study or mental work.

The Ready Assimilation of Iron.—Professor Von Ramdohr recently read a paper in which he took the ground that the peptonate of iron and manganese, known as Pepta Mangan Gude, gives extraordinarily good results in counteracting anæmia after surgical operations. To guard against any allowance for his enthusiasm he had the blood examined by experts. The results convinced him that it is not only possible, but beneficial, to give Pepto-Mangan immediately after surgical interference.

Well Worth a Trial.—A well-known doctor of Washington is authority for the statement that good results are obtainable from the use of Blackistone Island Lithia Water. He says he knows it to have been beneficial in the treatment of rheumatism when other remedies failed.

Confidence Well Placed.—A prominent physician writes as follows:

DECEMBER 6, 1897.

JOHN CARLE & SONS,
New York City.

GENTLEMEN: You can be assured that I will prescribe the IMPERIAL GRANUM, whenever there is an indication for a prepared food, because I had sufficient confidence in it to give it to my own

child, and it agreed with him perfectly, and he has increased in size and weight to an astonishing degree.

——— ———, M. D.

Physicians can obtain samples of this celebrated prepared food free, charges prepaid, on application.

Phthisis: Winter Coughs.—Dr. J. D. Albright, of Pottsville, Pa., declares that the best results in the treatment of phthisis have been obtained from the use of standard remedies, and prominent among these he places petroleum. He adds that the Angier Chemical Company, of Boston, have placed this remedy in our path in palatable form, combining it with the well-known Hypophosphites. In the commoner coughs, often spoken of as winter coughs, even when not of tubercular origin, and also in bronchitis, Dr. Albright says that Angier's Petroleum Emulsion is invaluable.

The Sleepless Habit.—Professor H. D. Chapin, of the New York Post Graduate Medical School, prefers sulfonal for the relief of the sleepless habit. He has never seen any bad effects from sulfonal on the heart or any other organ. He advises that the drug should be given in a dose of ten grains, well stirred in a glass of hot milk.

Continued Good Results.—Dr. T. D. Crothers writes that Antikamnia continues to improve in value and usefulness. The Edinburgh *Medical Journal* says it acts as a speedy and effective antipyretic and analgesic. The *Medical Annual*, of London, England, speaks of its relieving the lightning pains of locomotor ataxia.

Send Them to Bed.—When your patient complains that he has taken cold, follow the advice of Professor Tyson and send him to bed. Treat every case as if it were going to be a serious one. The indications for treatment are to relieve pain, sustain strength and reduce the fever. To accomplish these results administer quinacetine-sulphate in doses of from 5 to 10 grains every 2 or 4 hours.

To Solve a Hard Problem.—The problem is, what diet to order, in cases of acute dyspepsia, duodenal catarrh, fermentative dyspepsia, etc. The easy solution comes with the knowledge of Just's Food. There is the pleasant flavor, the quick digestion and the absence of all fermentation. By the way, these conditions make it the ideal food for typhoid as well.

Seasonable Brochure.—The "Present Status of Diphtheria Antitoxic Serum" is the title of a work recently issued by the H. K. Mulford Company, of Philadelphia and Chicago. It gives, in addition to a summary of the methods of producing antitoxins, a complete treatise on how to employ the remedy, and many other matters of interest. The brochure is mailed gratis on receipt of address.

Clinical Report.—Dr. S. B. Minden, of the Bellevue Hospital and Dispensary, extols the use of Ammonol in neuralgic dysmenorrhœa, migraine and la grippe. He reports cases in detail showing the beneficial effects of the drug.

Better Than Gold.—Health is better than gold, and a sure remedy for neuralgia than all the mines of Solomon. Most physicians are aware of these facts and know as certainly that Lucidine is the best remedy for neuralgia, hemicrania, sciatica, fever and influenza. Lucidine promptly relieves pain and positively leaves no bad effects.

The field for the application of anti-streptococcic serum is a very wide one. In the diseases directly due to streptococci, as puerperal fever, erysipelas and many of the septicæmias, and in all streptococcic complications following other diseases, as in scarlatina, diphtheria, tuberculosis, etc., it promises to be extremely useful. In the whole field of biological therapy the physician is absolutely dependent upon the skill and reliability of the manufacturer. The wonderful equipment and extraordinary precautions adopted by Messrs. Parke, Davis & Co. in the making of their biological products are known and appreciated by physicians everywhere, and the profession generally realizes the great assistance rendered by this firm to the cause of serum therapy, and has absolute confidence in its products.

The Medical Society of the District of Columbia is responsible only for the "Transactions" published in this journal. It is entirely free from any connection with the Editorial and Business management.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M. D.

MEETING OF OCTOBER 6, 1897. Dr. S. C. Busey, President, in the Chair.

The Board of Censors reported the following as eligible for membership and they were elected to full membership:

Drs. Lewis J. Battle, Joseph Lacey Brayshaw, Franz A. R. Jung, William May and F. A. Mazzée.

TUBERCULAR DISEASE OF THE FEMALE GENITALIA.

BY THOMAS E. MCARDLE, A. M., M. D.

Tubercular disease of the female generative organs is far from being a rare disease, as evidenced by the reported cases scattered over many years of medical literature. Almost as early as the recognition of tubercle in the lung tissue we have histories of autopsies revealing the presence of tubercular disease in the tubes, ovaries or uterus, either in one or more of these organs, as a primary disease of the tube, the ovary or the uterus, or as a secondary disease consequent to or coincident with systematic tubercular infection. It is true that until the verification methods of modern pathology and the discovery of the bacillus by Koch there was always an element of doubt as to whether many of the cases reported were really tubercular or not, yet even with this element of doubt it is more than probable that the majority of cases would be proven tubercular to-day, for the reporters were generally clinicians of ability, and the men who made the autopsies were skilled in their profession. Abdominal surgery in the past few years has, in a most remarkable manner, helped to a better understanding of this subject. It is really astonishing how silent on this matter were Rokitansky, Virchow, Lebert and other great masters of pathology. Their statements no longer hold good that tuberculosis of the ovaries, nay, even of the tubes, is exceedingly rare, for the contrary has been proven true. When we have such careful observers as Edebohls giving us a percentage of four, Martin a percentage of three, Williams, of Johns Hopkins, a percentage of eight, as a result of their investigations in the operating theater of general tuberculosis and of the appendages removed for inflammatory diseases, we cannot but realize that the subject is one that is being thoroughly studied, and that heretofore the field has not only not been cultivated but sadly neglected. Every portion of the genital tract may be affected, the order of frequency for the various portions being tubes, body of the uterus, ovaries, vagina, cervix and vulva. The

tubes are affected in nearly all cases; the body of the uterus in about three-fourths of the cases and the ovaries in about half of all the cases. It must be borne in mind that such a condition of affairs may exist as a primary disease in one or another of these organs, and this primary disease has for us the greatest possible interest. The frequency of the primary focus of the disease being situated in the tubes is not properly appreciated. It is to be noted that in the removal of tubercular Fallopian tubes, frequently on cutting them across they do not exude pus, but a caseous condition is observed. Again, the uterus is found free, the closed end of the tube indicating that the disease had not originated from the peritoneum, but clearly in the tubes themselves. It has been observed that it is very rare to find tuberculosis of the tubes alone in women who have been married for some years and who have borne children. Careful observations have shown that tubercular disease is confined mostly to the tube itself, occurring among the young and unmarried, and the following case in the practice of a friend bears this out:

Miss J. K., aged fifteen years, single, a student. Family history somewhat in the direction of tuberculosis. Menstruated at thirteen, regularly for one year, then profusely at times and somewhat painful. Patient now began to emaciate and was treated for more than a year by a specialist in his sanitarium with hot water douches, applications of glycerine tampons, iodine, etc., without any very marked improvement. When she came under my friend's observation there was a bilateral enlargement of the tubes, the uterus somewhat fixed; she was greatly emaciated and suffering, as he believed, from tubercular peritonitis. No abdominal fluid. On section the tubes were found greatly enlarged and distended, ovaries apparently healthy, but removed with the tubes. The latter, on examination, were found to be tuberculous in character. The patient made a most excellent recovery, and two years later was still in perfect health. Here the disease was confined entirely to the tubes, the ovaries and peritoneum having escaped. This case is confirmatory of the point in regard to the disease occurring among young, unmarried women. It is true we do not find the ovaries implicated in many of these cases, because the fimbriated end of the Fallopian tubes becomes closed, a wise precaution on the part of nature, it would seem, to protect the peritoneum from infection. In many of the cases of tubercular appendages it is really a local manifestation due to some etiological factor or as a sign of the tubercular blood or constitution of which the patient is possessed. Therefore, when we have a patient who suffers from pelvic diseases, and when all conditions, such as tumors, pelvic abscesses, etc., can be excluded; and we have present the constitutional symptoms, such as temperature, increase of pulse rate, hectic and an anemic appearance, all pointing to some obscure condition of the uterine appendages, we do not usually go astray in a direct exploration; and it is not surprising that we find a large number of these cases to be characteristic of local or possibly general tuberculosis.

Tuberculosis of the uterus is not at all a rare affection, and has been frequently discovered in autopsies upon phthisical subjects. It may be the only focus of disease in the body, but it is generally associated with disease of the tube, and is usually secondary to disease of that organ. It seems most probable —in fact, by some it is considered proven —that coitus can be a source of uterine infection with tubercular disease. Yet it has been asserted that frequently from

such a cause the tube becomes the primary focus and later infects the body of the uterus. It is well to remember that at first only the endometrium is involved, and the disease does not extend to the muscular tissue until a more or less lengthy period of time has elapsed. Whilst tuberculosis of the ovary has been almost doubted by some and by others considered very rare, nevertheless a sufficient number of cases have been reported to lead us to believe that primary tuberculosis of the ovary does exist without the involvement of any other portion of the genital tract.

There are two chief forms of tubercular ovarian disease described: the first, minute, miliary granulations on the surface of the organ; and the second, usually caseous masses. The latter may assume the size and shape of a small apple, dense on section, and containing numerous small cysts filled with viscid fluid. Such cases present little if any normal ovarian stroma. Either form, as here described, may be grafted upon papillomatous tumors, or other diseased conditions of the ovary.

Enough German and French surgeons and pathologists have reported cases of primary tuberculosis of the vagina to place the existence of that lesion beyond the peradventure of a doubt. Although tuberculosis of the vagina occurs most frequently during the period of greatest sexual activity, yet it has been found in a girl of seven, and again in an old woman of seventy-nine. It is usually secondary to disease affecting the higher portions of the genital tract, the majority of the cases being produced on the posterior wall by secretions from a tubercular uterus. Tubercular peritonitis may, in like manner, infect the vagina without any impression being made upon the tubes and ovaries.

Williams has advised that in view of mistaking it for carcinoma, the ulcerated variety of tuberculosis of the cervix deserves to be constantly borne in mind by operators; and undoubtedly tubercular ulcerations of the cervix have not infrequently been operated upon under the delusion that they were of carcinomatous origin. It is believed that further research will prove that, whilst tuberculosis of the cervix is not so common as tubercular disease of the body of the uterus, yet it occurs more often than is generally supposed. Cases are on record where the cervix was the sole location of tuberculosis in the genitals of phthisical women; and, again, in the cervix has been found the only trace of tubercular disease in the woman's whole body.

Of all the female genitalia the vulva appears to be the least liable to tubercular infection, but as progress is made in the study of tuberculosis of the female genital organs greater efforts will be made to differentiate more accurately the various diseases of the vulva, and when tubercle bacilli are found, or inoculation experiments yield positive results, the surgeon will have no doubt of the disease with which he has to deal. It is almost certain that more cases of vulvar tuberculosis will then be recorded and the good results obtained from surgical or medical means may prove valuable in the treatment of tuberculosis elsewhere. Van der Veer reports an exceedingly sad case occurring in his own practice. The patient was in an advanced stage of phthisis, with a sore about the vulva which gave rise to a very strong suspicion that she had contracted syphilis. The person was above all possible suspicion, but a careless remark on the part of the medical attendant caused much heart-burning and distress in the family relations. The doctor says if he had then known and made an examination

for tubercle bacilli, he is sure he would have demonstrated that the case was one of infection from general tuberculosis of the system.

The *etiology* of tuberculosis of the female genitalia is a subject for much investigation. As has already been said, it is quite generally conceded that the primary form may be the product of coitus, the male having tubercular disease of one or more of his genitals. The fingers or hands of the physician or nurse may carry the tubercle bacilli into the genital tract; so, too, may unclean instruments and syringes be the source of infection. Filthy conditions of the bed linen or wearing apparel may give rise to the disease. It has even been claimed that the tubercle infection may be transmitted through the medium of the air to the female genitalia. At any rate, it may be asserted that the bacilli are introduced by some means, and, finding the conditions favorable, multiply with great rapidity and set up a focus capable of infecting neighboring organs.

Secondary tuberculosis may be caused in various ways. Blood infection is the most probable explanation of the occurrence in very many cases. Tubercular infection has been transferred from the peritoneum to the tubes and, again, the peritoneum has been infected from the tubes. Moreover, the bacilli may gain access to the genitalia from other organs which are the seat of tuberculosis, by the formation of fistulæ between the diseased structure and various portions of the genital tract.

The microscope will settle beyond doubt the question of tuberculosis affecting the vulva and vagina. If the same means be applied to tuberculous ulcerations of the cervix, they will readily be diagnosticated from carcinomata, for which they are most frequently mistaken.

Whenever there is the slightest suspicion, the vaginal and uterine secretions together with material removed from the fundus of the uterus by curettage should be examined with the greatest care, and inoculation tests should be made if necessary. In the diagnosis of tubercular diseases of the tubes and ovaries greater difficulties present themselves. A probable diagnosis of tuberculosis of the tubes may be made in any case when, in addition to distinct tubo-ovarian masses, we are able to diagnosticate tubercular peritonitis, or as Osler expresses it, "the association of a tubal tumor with an ill-defined anomalous mass (tubercular tumor) in an abdominal cavity should arouse suspicion at once." Williams says, quoting Edebohls, the co-existence of tubal tumors or tumors with plaque-like thickenings of the sub-peritoneal tissues, points with greatest distinctness to tuberculosis. The tuberculosis under these conditions may fairly be assumed to be primary in the tube or tubes if no other deep-seated tumors can be palpated in the abdominal cavity. In one case of pyo-salpinx suspected of being tuberculous, Edebohls made a positive diagnosis by an exploratory puncture of the pus sac under the guidance of a combined vaginal and rectal touch, and the revelation of tubercle bacilli upon examination of the fluid removed. When a patient presents herself with local irritation which she has observed in the form of a slightly hardened mass, sometimes described like that of a split pea, located about the vulva, found at some point about the anterior or posterior fourchette at the opening of the vaginal outlet, or within the walls of the vagina, perhaps seen as a distinct grayish-looking ulcer about the lacerated cervix, an elongated posterior lip of inflammatory tissue, with possibly a profuse leucorrhœal discharge, in many instances

not irritating, yet great in amount as to be distressing, perhaps now and then tinged with blood, we should not delay in looking for tubercle bacilli. When a serous bloody discharge is persistent, we should carefully consider the element of malignancy, especially if the odor is very pronounced. Whenever the labia become the seat of local tuberculosis, the moisture and warmth of the parts favor early necrosis, but the odor is believed to be less unpleasant. The edges of the resulting ulcer are thin, purple, undermined; the base irregular, secreting a scanty, thin, puriform discharge. One point is at times healed, while the ulcer is spreading in another direction. Extension and destruction of tissues vary greatly. There may occur hemorrhage from erosion of blood vessels. It is apt to occur more frequently in young people, accompanied by tuberculosis of other parts of the body, and will recur at times after apparent healing. "Differentiation is not always easy as between epithelioma and syphilitic ulceration, but may usually be based upon the following points: 1. Age of patient; tuberculosis more frequent in early life and epithelioma in late life. 2. The history; antecedent syphilis; tuberculosis in other parts of the body. 3. Appearance of ulcer; more abundant, fetid secretions from epithelioma. 4. Effect of treatment. 5. Bacteriological tests." When we are to exclude all the external parts, and we find that the disease is confined to the cervix, we must remember that the error has not infrequently been made of vaginal extirpation being performed for what was supposed to be carcinoma, but in reality proved to be tuberculosis; therefore, it is our duty in all cases in which there may be the least possibility of a doubt as to its being one of carcinoma or of tuberculosis, to make microscopical examinations as early as possible.

Treatment: It is in the cases of local ulceration that present about the vulva, the walls of the vagina and on the cervix that the most gratifying results follow from the careful, thorough use of ichthyol, iodine, aristol and careful curetting, complete extirpation of inflammatory areas of implicated tissue, the removal of diseased glands, repair of the lacerated cervix, the free lancing and leeching of vesicles that may present at different points and packing with iodoform gauze. In all cases of tubercular endometritis thorough curetting should be employed. The wiping out of the cavity of the uterus with carbolic acid, the use of the peroxide of hydrogen and careful packing by means of strips of iodoform gauze should be tried exhaustively. If there should be a recurrence of the trouble, removal of the organ is advised. Now, if we bear in mind that tuberculosis of the body of the uterus is so frequently associated with the same disease in the tubes and ovaries, it seems to me that, having once ascertained, without the shadow of a doubt, the existence of tubercular disease in the uterus, it is our duty to look for a similar condition of affairs in the tubes and ovaries; and while we may not achieve the same exactness of diagnosis in regard to these organs, yet if we can be morally certain of their diseased condition, it behooves us to waste no valuable time in curetting the uterus and treating it with iodoform, but to proceed at once to the performance of an abdominal section for the removal of the uterus, tubes and ovaries. This heroic method of treatment is advocated in primary disease of these organs. In a case complicated by tubercular peritonitis, there would be no special danger in removal of the tubes

and ovaries. We all know how many cases of that disease have been cured by section and drainage. We could then curette and treat the body of the uterus. Clearly in cases of tubercular disease of the tubes and ovaries there is but one course of treatment left for the attendant, and that is complete and thorough removal by operative interference. But in a patient suffering from phthisis associated with secondary disease of the genital organs, the surgeon has a much more difficult problem to solve. The general condition of the patient must be taken into consideration, and he must weigh well the chances of life, even if his operation prove a success. In advanced phthisis it is doubtful if it would be worth while to expose the patient or her friends to the care, expense and risk of an operation so fraught with danger and so devoid of hopeful results. In the early stage of phthisis the surgeon might be led to decide upon an operation if the general condition of the patient warranted it and she were placed in the very best hygienic and climatic environment.

Just one word as to prophylaxis. Prevention, of course, is better than cure. Careful study of the male genitalia has made patent the fact that tubercular disease is not uncommon in those organs, and men so diseased should be cautioned as to the dangers of establishing or maintaining marital relations.

DISCUSSION.

Dr. T. C. Smith asked Dr. McArdle whether he deemed it probable that tubercular disease was sufficiently often confined to the female genital organs to justify the hope that surgical interference would result in a cure of the disease.

Dr. J. Wesley Bovee said: Many observers claim that all cases of infection of the ovary and of the Fallopian tube were from the peritoneum, by contiguity, and others that it was from the external genitalia. It seemed strange to him that if the disease spread from the external genitalia it should attack the tubes first, notwithstanding the invulnerability of the epithelium of the vagina and cervix. Dr. McArdle had made the point, as Williams and others had, of the differential diagnosis between cancer of the cervix and tuberculosis of the cervix. Cancer of the cervix, of course, should be removed, and it was not right to take it for granted that every case of tuberculosis of the cervix can be cured without hysterectomy. He believed the uterus should be removed for tuberculosis as well as for cancer.

Dr. Adajah Behrend asked whether there had been any cases of anæmia in those cases reported by Dr. McArdle, especially as there had been cases of young persons diagnosed as chlorosis and treated as such, until some time later the tubercular condition showed itself.

Dr. I. S. Stone said he believed it to be an almost invariable rule that women who were victims of tubercular disease suffered from a leucorrhœal discharge, and if this discharge were examined, or if portions of uterine mucosa removed with the curette were examined, he thought the tubercular origin would be demonstrated. While he would not positively deny the possibility of this, it seemed more probable that infection passed upward through the tubes to the ovary, and as to removing the entire genitalia for this condition he very much doubted the wisdom of such a procedure; he recalled several cases of tubercular peritonitis cured by so-called exploratory operations, and when cases of extensive disease could be cured in this way why should we eradicate the tubes and ovaries before they are actually involved? He did not see any necessity for it in the fear that the disease might spread to the peritoneum, for even were this the case the majority of such patients get well with simple incision and drainage, especially when the organs are not much enlarged or the seat of purulent disease. He could recall no case of so-called tuberculosis of the cervix uteri which had not been cured by a plastic operation.

Dr. J. Wesley Bovee said that he was very much surprised to hear Dr. Stone say at first that tubercular peritonitis undoubtedly came by extension from the genital organs, and to hear him say, also, that he would open the abdomen and expose the peritoneum to the air and leave the infected tubes and ovaries in situ to reinfect the patient. It cannot be expected that tubercular peritonitis transmitted from the tubes can be cured by opening the abdomen and allowing the tubes and ovaries to remain.

Dr. H. L. E. Johnson said that the lesson which Dr. McArdle's paper teaches is that we should pay more attention to diagnosis and avail ourselves of modern scientific methods. When a diagnosis of tuberculosis is decided upon it seemed to him that a course of treatment following the lines laid down by Dr. McArdle would be followed by good results. It was perfectly reasonable to suppose that the removal of tubercular tubes, to say nothing of tubercular uteri, would result in a cure of these cases. There had been several cases reported in this city (one by Dr. McArdle) which showed that that was the usual result. But if any foci of the disease were allowed to remain, the adjacent organs would become infected. As to any cases of tubercular peritonitis being cured by simply opening the abdomen, he thought was somewhat doubtful. He had seen only one case of that disease; in that one all the diseased tissue had been removed, yet the patient had died some months subsequently and there had been no amelioration of the disease. In this case there could be no question of the accuracy of the diagnosis, because he had Surgeon Walter Reed's report to show that it was tubercular peritonitis.

Dr. Forwood said that it might be of interest to members of the Society to know that an excellent book had just appeared on tuberculosis of the genital organs, by Dr. Senn, of Chicago. The reason why we know so little on this subject was because hundreds of tubes were removed and, with simply a cursory inspection, diagnosed as probably gonorrhœal and thrown away without further investigation. It was easy to make sections and examine these tubes with the microscope, which would determine at once whether the disease was carcinoma, tuberculosis or gonorrhœa.

Dr. McArdle, in closing the discussion, recommended Dr. I. S. Stone to pursue the plan of careful investigation adopted by Jacobs, of Brussels. That part of the paper concerning the tubercular ovary, especially the primary disease, could have been strengthened by a thorough quotation of authorities. His paper on Abdominal Section for Tubercular Disease of the Female Genitalia, read at Richmond a year ago, elicited a full discussion by some of the most eminent surgeons in this country, and they were quite unanimous in stating that there should be no hesitation about operating, even when tubercular peritonitis is present.

In reply to Dr. Smith's question Dr. McArdle said that if the primary focus were removed before systemic infection had taken place the patient would undoubtedly be cured, but if she had tubercles both in the lungs and tubes the removal of the tubes would not cure the tubercular lung.

In reply to Dr. Behrend he said it is very probable that a great many young girls, who are being treated for chlorosis, would, upon proper and thorough examination, be found to be suffering from tubercular disease.

The Society adjourned.

MEETING OF OCTOBER 13, 1897.

Dr. S. C. Busey, President, in the Chair.

Dr. D. S. Lamb presented the following specimens:

1. HEMORRHAGE INTO SPINAL CORD.

Specimen of spinal cord from cervical region; divided in the median plane, and showing extensive hemorrhages. Occurred in a soldier who fell headforemost 21 feet into a cellar, dislocating the third vertebra forward upon the fourth. His limbs were paralyzed and there was paralysis of sensation at the

back below the level of the shoulder, and in front, below a line curving from shoulder to shoulder through the nipple level. He lived for 36 hours.

H. PRE–COLUMBIAN SYPHILIS.

Bones of arm, forearm, thigh and leg, from the same skeleton. Disinterred from an Indian mound in Florida. They were 12 feet below the surface and below unbroken strata. No articles of European make were found with the skeleton, for which reason the finder, Mr. Clarence B. Moore, of the Academy of Natural Sciences, Philadelphia, considers them to be pre-Columbian. The evidence of constitutional disease of the bones is in the shape of extensive inflammation, sclerosis, nodes, caries and necrosis; an osteo-periostitis. The joint surfaces, so far as preserved in the bones, are normal. In the same mound were a number of skeletons showing these lesions; the skulls showing nodes. There seems to be no doubt at all that these bones are syphilitic.

DISCUSSION.

Dr. E. L. Morgan said: Will Dr. Lamb be kind enough to state what other evidence of pre-Columbian character of these bones Mr. Moore has to offer, other than that they were found buried 12 feet below the surface of the mound and that they appear to have been never disturbed, and that there were no objects of European origin deposited with them. For these reasons he seems to think that they did not come in contact with the whites, and that there were no intrusive burials in this burying ground, and that the diseased bones are, therefore, of pre-Columbian origin. I do not believe in the existence of pre-Columbian syphilis in America. This disease existed in Europe, Asia and Africa thousands of years before Columbus was born. Bones similar to these have been found in Colorado, California and in the mounds of Tennessee. As to the great antiquity of these mounds, there are differences of opinion. The followers of Bishop Madison, of Virginia, contend that they are of Indian origin, while Thaddeus Harris, of Massachusetts, contends that they were built by the Toltecs.

The mode of burial signifies nothing, as different tribes used different methods, and some even cremated their deceased friends. I have seen bodies that were buried in piles of rocks in a crouching posture. While the Indians, as a rule, deposited the property of the deceased in his grave, it does not necessarily follow that those articles which he received from the whites were always buried with him in every case, and that because no brass buttons, or other articles which he might have obtained from the whites, were found in the grave that he must, therefore, have been buried before the advent of the Europeans. The method of computiug the age of mounds by the size of trees growing upon them, and the number of annular rings of such trees, as a theory has been exploded. Trees in the tropics grow faster than those in Minnesota, and this fact combines with other causes to produce the annular rings. Why attempt always to refute the theory of the European origin of syphilis and accept the theory of the American origin? In an argument of this kind bones that are syphilitic are the only evidence that can be accepted, and their great antiquity must be proved. In France a female skeleton was found which belonged to the "prehistoric period," and Broca, Ollier, Parrot and Virchow, distinguished scientists, state that these bones were syphilitic and of great antiquity, belonging to the stone age of Europe. M. Rollet examined these relics of Solutré, and believes that these bones are evidence of syphilis in Europe in remote ages. Scientists make strange statements in regard to American antiquities, and the great age of skeletons, etc., found here. Mr. Bancroft, in his celebrated work, "Native Races of the Pacific States," mentions the fact that bones and implements were found at a depth of 100 feet and 300 feet from the side of a mountain. These were supposed to be thousands of years old, but

the fact is that they were of quite recent origin. Virchow had a skull of pre-Columbian origin that came from Porto Rico, and comparing it with a syphilitic skull, it was shown that the roughened condition was produced post mortem by a worm. Diseases of the bones caused by phosphorus poisoning also resemble the syphilitic process.

Dr. D. S. Lamb said he supposed there was no doubt as to the character of the bones; the question of phosphorus poisoning could not be raised in this case. As to their being pre-Columbian, he could not discuss that point, as he was not an authority on that subject, but the gentlemen who had sent the bones to the Museum was a recognized authority. He had been through Georgia, Florida and other States making a study of Indian mounds, and his argument as to their being pre-Columbian was based upon the fact that there was nothing in the mound from which these bones were taken to show any European influence. The bones had evidently been lying in the mound a long time, for they were found under strata of earth which had never been disturbed. Those who were familiar with Indian mounds knew that with every burial something was placed beside the body, and he thought all gentlemen could see the importance of the point raised by Mr. Moore that the absence of anything European in the mound showed its pre-Columbian character.

A CONTRIBUTION TO ARHYTHMIA OF THE PULSE AND ITS SIGNIFICANCE.

By Dr. Thomas Ash Claytor.

There is, perhaps, scarcely any other symptom which is more capable of alarming the patient and of annoying the physician, or concerning the physiology of which less is definitely known, than that of arhythmia of the pulse. Broadly it may be said that arhythmia of the pulse is a deviation from the normal which may find its expression in any one of the following forms:

1. The PULSUS INTERMITTENS signifies the dropping of a pulse beat; several normal beats succeed each other and then the pulse is absent during the time occupied by one or two beats. The intermissions may occur at regular or irregular intervals and may be either true or false, *i. e.*, there may be a complete absence of the ventricular systole constituting true intermission (deficiency) or the contraction may be so weak as to fail to drive the blood current to the radials, which is known as false intermission.

2. By the PULSUS ALTERNANS we understand that there occurs an alternating weak and strong pulsation.

3. In the PULSUS BIGEMINUS a full systole is, after a short diastole, followed by a short and incomplete systole, and this in turn by a long diastole. The coupled heart-beat is evidenced at the wrist as either the bigeminal pulse or as the false intermittent. The tri- and quadrigeminal pulses are similar to the above, except that the fourth or fifth beat is omitted instead of the third.

4. The wholly irregular pulse as to time and force is known as DELIRIUM CORDIS.

5. By the PULSUS PARADOXUS is meant a weakening of the pulse during inspiration.

While embryocardia and gallop rhythm are forms of cardiac arhythmia they have have not been described since they have no distinctive expression at the wrist.

The INTERMITTENT, the ALTERNANT, the BIGEMINAL and the WHOLLY IRREGULAR are the four primary forms of arhythmic pulse, but of these there may be many combinations.

The same patient may present, at different times, several varieties of arhyth-

mia or varied forms may follow each other in quick succession. When even though there is irregularity of the pulse, a distinct method in the irregularity is observed, the condition is known as allorhythmia ("Arhythmie Cadencée" of the French), of which the bigeminal pulse is an example.

The vagus is the cardio-inhibitory nerve, stimulation of which, either at its center in the medulla, or along its course, first causes slowing of the heart or momentary arrest; second, lowering of the intra-cardiac pressure (Weber Brothers). The real inhibitory fibers are, however, derived from the spinal accessory.

The sympathetic is the accelerator of the heart stimulation, causing increase in the frequency of the pulse and in the force of the ventricular contractions. The augmentor center is thought to be in the bulb. (W. T. Porter, American Text-book of Physiology.)

The vagus and the sympathetic, together with the ganglia of the heart wall, constitute, then, the nerve supply of that organ.

It was long since proven that the frog's heart could be kept beating rhythmically for many hours after its removal from the body, but in 1895, Longendorff was able, by circulating warmed, oxygenated, defibrinated blood through the coronaries, to maintain the hearts of rabbits, cats and dogs in activity after their total extirpation from the body. (W. T. Porter, American Text-book of Physiology.)

It is then quite evident that the rhythmic heart beat is entirely independent of the central nervous system. As to whether the intra-cardiac power is derived from the ganglia in its walls or whether it is an inherent quality of the muscle fibers, there is still some doubt, though the majority of authorities of our time favor the theory of muscular origin.

Wooldridge, in 1883, demonstrated that there is an idio-ventricular rhythm, *i. e.*, that the ventricles will contract rhythmically, though cut off physiologically, from the auricles. This rhythm, however, is slower than that of the auricles.

Professors Roy and Adami showed by experiments upon mammalian animals that stimulation of the vagus weakens the force of the auricular contractions, and probably, to a corresponding degree, the strength of the rhythmic excitation which reaches the ventricles from above, and, at the same time, it diminishes the excitability of the ventricles, but in spite of the latter the ventricles tend to take up a rhythm of their own, which is slower than the normal beat. Each rhythm alone is regular, but when they both affect the ventricle at the same time, there is interference with the production of a rhythmic irregularity.

Simple intermittency, however, may be due to weakened auricular impulses, not being followed in all cases by a ventricular contraction; in this way may be produced a bi-, tri- or quadri-geminal pulse or other varieties of intermittency. (Roy and Adami, *Phil. Tr. 1892, London, 1893, clxxxiii.*)

So much for the theory of the production of arhythmia through the medium of the vagus nerve alone, but it does not seem improbable, as has been suggested by Huchard, in reference to the arhythmia so often accompanying myocardial disease, that, since the heart muscle is connected so closely, if the rhythmic contractions are due to the muscle, lesions of the muscle, by destroying their continuity, would produce arhythmia; and to account for the fact that the extent of the lesion sometimes does not seem to

bear any relation to the amount of arhythmia, he suggests that there may be portions of the heart, as of the brain, which are more tolerant. ("*Traité Clinique des Maladies du Cœur*," etc.) According to Huchard, from a physiological point of view, we may recognize three classes of arhythmia: those of myocardial, nervous and mechanical origin; while from a pathological, there are six:

1. Neurotic and psychic	Hysteria, Neurasthenia, Epilepsy, Exophthalmic goitre. Emotions: Paroxysmal arhythmia.
2. Nervous and Cerebral.	Meningitis — simple and tuberculous, Apoplectic stroke, Hemorrhage—cerebral or meningeal. Cerebral Tumors. Compression of the vagus by tumors.
3. Reflex	Diseases of the intestine, uterus, stomach, etc. Arhythmia from cold.
4. Toxic	Digitalis, tea, coffee, tobacco, abuse of alcohol, etc.
5. Critical arhythmia of acute diseases	Convalescence of typhoid fever; at the moment of defervescence of pneumonia and other acute diseases.
6. Arhythmias of Cardiopathics:	
(1) Valvular	Insufficiency of the mitral. Stenosis of the mitral.
(2) Myocardial	(*a*) Acute Myocarditis in typhoid, grip, variola, etc. Chronic Myocarditis—(*b*) senile arhythmia, degeneration and over charge of fat of the heart. (*c*) Arterial cardiopathics. (*d*) Endocarditis, pericarditis, adhesions of the pericardium. (*e*) Insufficiency and stenosis of the aortic valves of arterial origin. (*f*) Sometimes angina with concomitant cardiosclerosis.

(Huchard, Loc. cit.)

I shall not attempt to consider all the causes of arhythmia, but shall take up a few of the more important.

1. While arhythmia of the pulse may in many cases be purely neurotic in origin, it becomes of great importance to determine the true cause, because of its frequent association with most serious maladies.

Under the name of "L'arhythmie angoissante paroxystique et essentielle," Huchard has described a peculiar form of arhythmia occurring usually in comparatively young people who, while in good health, are suddenly taken with a disorder of the heart-beat. The irregularity, which is quite marked, is nearly always accompanied by a sensation of distress without true anginoid pains. The attack may terminate in a prompt regulation of the pulse, which may remain so for weeks or months even, until the next crisis, which follows nearly always without apparent cause. These cases are observed among the nervous and neurasthenic without heart lesion, and should not be mistaken for true angina. (Huchard, *loc. cit.*)

Sir Benjamin Ward Richardson was one of the first to pay special attention to the psychical influence upon the heart's rhythmic action. His experience has, however, been confirmed by that of many others. Shocks to the nervous system from grief, fear, rage, worry, etc, are not infrequently the causes of arhythmia, which usually takes the intermittent form.

The writer speaks of having seen five cases of insanity, with attempted suicide, where an intermittent pulse was the first physical indication of derangement. (Æsclepiad, 1884, vol. 1.)

Arhythmias from shocks usually show a tendency to recover, but may remain permanently. Balfour tells of a case where an intermittency, which was brought on by a railroad accident, occurred at first at every second beat, but came down to one in twenty. (*Edinburg Med. J.*, 1876, G. W. Balfour.)

2. Only very seldom, according to Nothnagel (Deutsch. Arch für Klenisch. Med., 1876), do we see a case of meningitis which does not at some time during its course show an arhythmic heart's action. The pulse, which is slow at first, becomes irregular and frequent, but seems to follow no peculiar form of arhythmia. It is not unusual in this condition to note that very unstable state of

the circulatory apparatus, whereby the pulse varies from minute to minute; the slow pulse of 60 may rise in a short time to an average of 110 to 130 per minute and again subside. Baumgarten is of the opinion that these rapid variations invariably point to central trouble—compression, concussion, etc.—but may also be noted, sub fine vitæ, as an expression of failure of the vagus center. (Vol. iii, 1888, G. Baumgarten. *Transactions of the Association of American Physicans.*)

Arhythmia is not unusual in concussion and has been noted in syncope, but far less frequently does it occur in other intra-cranial diseases, such as cerebral hemorrhage, tumors, etc.

Arhythmia may result from pressure, irritation or disease of the vagus trunk. Thus tumors of the neck or thorax, such as aneurism, hyperplasia of the thymus or thyroid, etc., may at times cause the phenomenon, or neoplasm of the nerve trunk itself, as in Heine's famous case of a man whose heart ceased to pulsate for the time occupied by five or six beats, during which time the patient suffered intense agony. A diagnosis of tumor of the vagus and hypertrophy of the cervical cord was made and in due time confirmed at the autopsy. (Joseph Heine, *Muller's Arch. of Anat. and Physiol., 1841.*)

Those most remarkable cases, where the individual can, at will, produce an intermittency, belong under this head, since it seems probable, as Nothnagel has suggested, that the arhythmia may be caused by pressure in some way being brought upon the vagus. Fothergill (*Lancet,* December 10, 1890) mentions an Indian officer who, having acquired the habit, finally lost his life practising it.

3. Arhythmia may be caused reflexly by irritation or pain in any part of the body, such as biliary or renal colic or angina pectoris. According to Osler, the heart's action in severe spells of angina pectoris is probably always disturbed, the force of the impulse weakened and the rhythm altered. (*Angina Pectoris and Allied States.*) Nothnagel speaks of a condition of arhythmia brought on by cold bathing (*Deutsch. Arch. f. Klein. Med. Bd., 17th, 1876*), which, however, must be very rare.

4. The toxic causes of arhythmia may be divided into (1) drugs, and (2) infections and toxins. Under drugs may be considered tea, coffee, tobacco and alcohol.

It is well known that the active principle of tea and coffee causes cardiac arhythmia, nor is it very unusual to find a similar result produced by excessive use of the above as beverages.

We are all more or less familiar with disturbances in the heart's action due to the use of tobacco.

Osler recognizes three groups of the so-called tobacco heart.

1. The irritable heart of smokers where palpitation, irregularity and rapid action are the chief symptoms. This form is common, particularly in young boys.

2. Heart pain.—Sharp shooting pains about the heart which may occur alone without disturbance of cardiac rhythm and without the intensity and associated features of an attack of angina.

3. Tobacco angina.

Disturbance of rhythm is the most constant effect of tobacco, and intermittency is more common than either slowing or hastening of the heart's action. (Osler—Angina Pectoris and Allied States.)

The various other drugs which are capable of producing arhythmia, digitalis, strophanthus, chloral, aconite, veratrum, muscarine, etc., will not be considered.

In that class of toxic arhythmias due to drugs, the prognosis is generally favor-

able, the removal of the cause being usually sufficient to effect a cure.

6. While arhythmia of the pulse does not by any means always indicate disease of the heart, still the presence should, in every case, be the signal for a thorough examination. It may be associated with a lesion of any of the valves when compensation is ruptured, but is so much more frequently found where the mitral is the seat of trouble, that efforts have been made to explain its occurrence.

Irregularity presents itself with the first onset of symptoms in mitral insufficiency and often remains after compensation has been established. (Osler.)

Broadbent says that habitual irregularity of the pulse is so common in mitral insufficiency, and so rare in other valvular lesions, that it cannot be put down to any alteration in the cardiac walls or cavities, still less to the nerve influence. His explanation is, that during inspiration pressure is greater on the auricle, hence less blood is allowed to return from the ventricle; while during expiration the heart is in a state of negative pressure and more blood is allowed to return, thus making the irregularity of the pulse. (Broadbent—*The Pulse.*)

Huchard recognizes two classes of arhythmia in mitral insufficiency, one appearing early, due, he believes, merely to mechanical causes, the other coming on later as the result of the failing myocardium, and hence of far graver import. In aortic diseases it is also unfavorable.

He then sums up the value of arhythmia as a prognostic sign by saying: "In a word, when arhythmia occurs in a cardiopathy where it is not ordinarily one of the regular train of symptoms, it should be taken into serious consideration." (*La Medicine Moderne, March 27, 1897.*)

According to Whittaker, irregular action and arhythmia are not necessarily bad signs in valvular lesions, but become bad when the rhythm may not be restored by rest in bed and heart stimulants. An early arhythmia or allorhythmia and Cheyne-Stokes respiration are *signa mali ominus.* (*Twentieth Century Practice.*)

In acute myocarditis arhythmia is often one of the earliest symptoms, hence its occurrence during the course of diseases such as typhoid fever, diphtheria, small-pox and influenza should at once arouse the gravest fears of a beginning myocardial change. In this class belong the second division of toxic arhythmias.

While arhythmia in the infectious diseases, as Wertheimer, following the teachings of Hayem, Desnos and Huchard, remarks, may be due to ataxia of the nervous system, it may, on the other hand, be the result of myocarditis, and in these cases is always a bad symptom. (Pouls., *Dict. Encycl. de Sc. Med., Paris, 1889.*)

Hayem has attached great importance to the stage of typhoid fever at which arhythmia makes its appearance. If during the second or beginning of the third week, the prognosis at once becomes grave, while if it appears only at the moment of defervescence, it means no danger, but rather convalescence. (*Lecons sur les Complications Cardiaques de la fievre typhoide, Progrés Medical, 1875.*)

Sansom says that the pulse of typhoid fever exceptionally manifests a very slight amplitude and great irregularity. In these cases there can be no doubt that there is myocarditis. The prognosis when this has been observed, is grave; sudden death may take place. (*Diagnosis of diseases of the heart, etc.*)

Diphtheria does not, as a rule, show arhythmia until the period of convalesc-

ence is established, and then almost always indicates a fatal termination.

Among the acute infectious diseases which may show, during their course, or which may be immediately followed by cardiac disturbances, there is no one of greater interest, because of its prevalence, than epidemic influenza.

Of one hundred cases of morbid conditions of the heart referable to "grippe," Sansom found twenty-five per cent to be of the arhythmic character, and remarked in conclusion—we may say that a morbid change in the cardiac reflex may have its expression in irregularity. The immediate cause of the lesion may be hemorrhage or neuritis caused by the toxines of the disease-producing microbes. (*Brit. Med. Journal*, Nov. 10, 1894.) Other writers, however, attribute the abnormal cardiac conditions to myocarditis. The truth probably lies between the two opinions.

Arhythmia of the pulse may be the first, and is often, for a long time, the only, indication of chronic myocarditis. Huchard has called attention to the fact that, in cardio-fibrosis, the arhythmia frequently takes the allorhythmic form, with which my own experience accords.

In fatty degeneration, according to Kisch, as quoted by Whittaker, arhythmia exists in eight per cent of all cases, and as evidence of serious degeneration of the muscular tissue is a sign of great danger. (*20th Century Practice.*)

Occurring in atheromatous disease of the blood vessels, Sansom does not consider that arhythmia can be taken as practical criteria of any affection of the myocardium, but rather due to disturbance of the nervous mechanism of the heart. He believes the slow pulse to be of much more serious import than arhythmia or tachycardia, except in extreme cases.

The above author, however, is not generally supported in this view.

The irregular heart's action seems more readily explained by probable degenerative changes due to associated lesions of the coronaries or their minute branches.

Arhythmia is so common among those advanced in years, who otherwise are apparently in perfect health, that some special mention of this form seems necessary.

So frequently is this symptom observed, that some authors are inclined to make light of it, and, in fact, it has been considered almost physiological.

Huchard says that he has often observed the irregularity, but always found, at the autopsy, a lesion to account for it.

In these cases it is frequently only necessary for the patient to have an acute attack of pneumonia or influenza, for the disease of the heart, which has remained latent, so to speak, to manifest itself. (*Traité Clinique des Maladies du Cœur, etc.*)

It may be said, then, that many of the arhythmias observed in the aged are the result of a slow myocardial degeneration, which may not progress rapidly enough to cause any serious inconvenience, but which, nevertheless, may become a serious complication in case of an acute intercurrent disease.

One form of arhythmia which has a definite value, as a means of diagnosis, is the "pulsus paradoxus," which Kussmaul considered pathnomonic of fibrinous mediostino-pericarditis, but which has also been observed in other conditions, especially large pericardial effusions.

When due to mediostino-pericarditis, the bands about the large vessels are tightened by the expansion of the sur rounding strictures during inspiration, and the blood current thus interrupted.

Since Kussmaul's explanation of the paradoxical pulse, it has been shown to be produced by anything which interferes with the escape of the blood from the heart entirely independent of pericarditis. The phenomenon has also been observed in sleeping children. It is, however, an important diagnostic sign.

Arhythmia may occur at any period of life from the hour of birth to old age. As to its significance in infancy, there is a difference of opinion.

According to Balfour, arhythmia occurring immediately after birth, always indicates some weakness of the cardiac walls or irritability of the cardiac innervation and though not necessarily of much importance, is many times associated with serious lesions of the valves or heart muscle which tend to shorten life. (*Edinburgh, M. J., 1876, Intermittency and Irregularity of the Pulse, etc.*)

Richardson believed that arhythmia occurring in infancy, was an important indication of serious nervous derangement. In young adults it had the same meaning and told the story of commencing failure of power. (*loc. cit.*)

Whittaker, on the other hand, is of the opinion that, in young people, it may have *no* special significance, but in a general way is of more importance than palpitation. (*loc. cit.*)

From the foregoing the conclusion may be drawn that an arhythmic pulse, perhaps in the majority of instances, may not be of serious import; it is, at the same time, so often the result of grave nervous or cardiac change, that its recognition should certainly be the signal for a careful investigation as to its probable origin.

Finally we may say:

1. That the prognosis in an arhythmia of purely neurotic origin is more favorable, so long as the patient is unaware of the disordered heart-beat, since anxiety and worry have a marked tendency to increase the trouble.

2. That an arhythmia which is present only occasionally is of less importance than one which is persistent.

3. That the disappearance of an arhythmia upon exertion is, of course, favorable, while one which becomes more marked is correspondingly unfavorable, as indicative of myocardial incompetency.

4. That, generally speaking, an allorhythmia (rhythmic arhythmia) is of graver prognosis than an irregular arhythmia, since this form is so often associated with myocardial degeneration.

DISCUSSION.

Dr. T. E. McArdle said: One's personal experience, if sufficiently extensive, might prove of interest. Arhythmia is often a danger signal which should lead us to look for something else. In the second week of typhoid fever in young persons the appearance of arhythmia is an alarming symptom. In disease, disturbance of the rhythm occurs as intermission or as irregularity. Irregularity is not incompatible with health, but is much more likely to be of serious import than intermission. In individuals of 60 years of age and upwards arhythmia is not an alarming symptom.

As to some of the effects of digitalis, he said he was not prepared to accept all the statements of the essayist, though he knew they were the most recent views.

Dr. J. D. Morgan said that an interesting feature in some cases of arhythmia was that it sometimes had a tendency to run in families, and he had known of one family where this intermission of the pulse appeared in a mother and several daughters, and in whom there were no other manifestations of ill-health. Since

the bicycle had come into vogue it had proved to be another etiological factor in the production of arhythmia. He knew of a case of vertigo produced by intermission of the heart brought on by bicycle riding.

Dr. William H. Forwood said that he arose to invite any gentleman who might wish to pursue the subject of heart disease and who lacked subjects for study to visit the Soldiers' Home and take advantage of the cases there. Among the inmates were to be found almost every variety of heart disease, tachycardia, brachycardia, all forms of tobacco heart and senile heart, as well as the one under discussion, and if some one would go there he could find plenty of material for a very interesting paper.

Dr. A. F. A. King said that some years ago he had known of a case of persistent intermission of the pulse, due to the use of tobacco. After taking digitalis, strychnia and other medicines without effect, the patient went to the seashore, where he took cold baths. One sea bath had the effect of regulating his heart, and continuing this the arhythmia was permanently cured. He mentioned this fact for the benefit of Dr. Morgan and others who might suffer from irregularity.

He had also seen recently a remarkable case of arhythmia following an attack of "la grippe," in a lady 46 years of age. He had never seen a case exactly like this. When he first heard of it he had thought it was the common arhythmia of the menopause, but the lady was still regular in her menstruation. The symptoms were as follows: she would be apparently perfectly well, and then, without any apparent cause, there would come a great rapidity of the heart, with extreme feebleness. This would continue for varying lengths of time—sometimes it would be very brief, then again it would last three, four or five days, and sometimes as long as six or seven, when the pulse would be so feeble that it could scarcely be counted. Then, as suddenly as the attack had begun, it would pass away and the heart would become absolutely regular, remaining so for a couple of weeks, and then another attack would come on as suddenly and unaccountably as before. For some time this patient had had a very slight goitre, but with no exophthalmos, and he was inclined to believe that the case was one of Basedow's disease, although she had been examined by Janeway and others who were of opinion that it was not a case of this kind. The case was still going on, the patient taking strychnine, digitalis, cod liver oil, iron and other tonics, but neither these nor any other drug had done very much good. The patient was losing flesh under her peculiar ailment. She had used galvanism of the sympathetic nerve, and applications of icebags to the precordia to check the palpitation, but had not been benefited by any of these remedies.

The President said that notwithstanding the regularity of the menstruation he believed that the arhythmia was a symptom of the menopause, and that there was a nervous element in it, as well as the exhaustion following the attack of grippe, as the etiological factor, and he predicted that the case would get well upon the establishment of the menopause.

Dr. Adajah Behrend said that he had had a case of arhythmia for several years. The patient was a smoker, but he gave up smoking and still the attacks continued. However, the man went to California and came back very much improved in health. He recalled a remarkable case that came under his notice in his earlier days while he was in

the army. It was a man who was able to do what he pleased with his heart; he could make his pulse beat as high as 200 per minute, or he could make his heart stop beating altogether for a minute. He was anxious to leave the army and go home, and played this trick on the surgeons to get discharged.

Dr. S. S. Adams said that to-day the profession placed very little prognostic importance on arhythmia, and so far as his observation went this condition amounted to very little, at least in children. There were some diseases, however, such as cerebral diseases, in which arhythmia was significant, but in the general run of cases the symptom was of very little prognostic value. He had seen a very interesting case last winter. A woman 75 years of age had come to him with evidences of having had chills. He used the thermometer, and at the same time counted the pulse, and to his surprise the pulse only beat 40, while the thermometer registered 103½. He then counted the pulse at the other wrist and found that it was 110, corresponding with the temperature. He learned that the woman had been paralyzed on the side on which he had first counted her pulse, and she told him that she used to amuse herself with young doctors by getting them to count her pulse on the paralyzed side.

Dr. F. B. Bishop said that in the treatment of nervous diseases we frequently come across patients suffering from irregularity of the pulse, and especially was this true of the so-called *functional* nervous diseases, such as chorea, neurasthenia, idiopathic epilepsy, hysteria, etc. Any of these conditions may come on as a sequel to malarial, rheumatic or other fevers, la grippe, scarlet fever, diphtheria, etc., or may follow a severe shock to the nervous system. The most severe cases that ever came under his observation were due to shock, such as fright. It was hard to say what influence these diseases and shock had upon the nerve centers, but he believed that they produced an unstable condition of the higher nerve centers, and that after the cause had subsided the nerve centers were left in such a condition that they were incapable of adjusting themselves without assistance. Now, as the sympathetic and vaso-motor systems are under the influence of the higher cerebral centers, and these higher centers are out of unison and transmitting false impressions and impulses to the various organs of the body, even the brain itself, causing the subject to conjure up all sorts of imaginary conditions, it is perfectly natural that the heart should come in for its share of these false impressions and get out of kelter also.

Dr. Claytor, in closing the discussion, said that in regard to the use of digitalis for diagnostic purposes, as mentioned by Dr. Acker, he thought there were cases where it was a great aid to diagnosis. If digitalis were given in a case of valvular lesion showing arhythmia and the irregularity disappeared it was a good sign, showing that the arhythmia was due to some mechanical cause or temporary weakness, while in cases where the myocardium was degenerated the digitalis would have but little effect. On the other hand, in certain cases, digitalis might produce arhythmia of the pulse. He had seen such cases. There were some authorities (Huchard), however, who claimed that it was impossible to produce arhythmia by the use of digitalis in a sound heart. In regard to Dr. Kleinschmidt's remarks he could only say that it required a physiologist to reply to them and that he did not feel competent to do so. As to the arhythmia of old age, this was generally the

result of myocarditis, but the real danger lay in intercurrent diseases, such as grippe, pneumonia and the like. In regard to family predisposition, which Dr. Morgan spoke of, a case had been reported by Richardson where both the father and mother had this irregularity, which continued all through life. As to the Doctor's own intermittence, however, he thought it might be due to indigestion, the use of tobacco or some such cause. As to the case of the bicycle rider which he had mentioned, it was possible that the man had a weak heart and that the riding simply developed this latent weakness. The case mentioned by Dr. King seemed to have exactly the form of arhythmia described by Huchard as "arhythmia angoissante paroxystique essentielle," where the heart was irregular for days or months, and then the irregularity disappeared, to return again later, and where there was no heart lesion. As to the cold baths spoken of in connection with Dr. King's first case, it seemed to be an example of the beneficial effects of hydrotherapy, so well known in the treatment of certain nervous diseases. The second case followed on an attack of influenza, and Sansom had reported 25 per cent of arhythmias in an analysis of 100 cases showing cardiac disturbances following grippe. The case reported by Dr. Behrend was a very interesting one, and there were very few such cases on record. As to Dr. Adams' case, he did not attempt to explain it. Dr. Bishop's case was one of nervous origin and was very interesting.

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Original Articles.

THE NITRIC ACID TEST IN THE EXAMINATION OF THE URINE.

BY CHARLES E. SIMON, M. D.,
Baltimore, Md.

In conformity with the instructions usually given in text-books on urinary analysis, the nitric acid test for albumin is generally employed in the following manner: A certain amount of urine is placed in a test-tube and nitric acid allowed to trickle down the sides of the tube, so as to form a distinct layer beneath the urine. In the presence of albumin, a cloudy ring will be seen to form at the zone of contact of the two fluids. If it is only desired to test a given urine for albumin, no objection can be made to this procedure. The amount of general information, however, which can thus be obtained is rather limited, and a great deal more may be learned from the specimen if a conical glass, of about two-ounce capacity, be used in place of the test-tube. This modification is quite generally accepted in the hospitals of France, and many of Germany, and undoubtedly deserves the attention of American physicians.

The glass is filled to about one-half of its capacity with the urine to be examined, when nitric acid is carefully added from the side, or through a pipette carried to the bottom of the vessel, so as to form a layer of about one-half to three-quarters of an inch in depth beneath the urine.

Under normal condition a brick-red to rose-colored band, referable to the presence of normal urinary pigments, is then observed at the zone of contact, while the urine itself remains perfectly clear. If albumin be present, however, a more or less pronounced cloudy ring will be seen immediately above and merging into the colored ring. Its extent and intensity vary with the quantity of albumin present, and it is possible with a little experience to form a fairly accurate idea of the total amount. To this end the depth of the albuminous ring should be accurately measured and the amount of albumin determined separately with an Esbach albuminimeter. Bearing in mind the extent of the ring and the amount ascertained, it is possible, after a few experiments, to make an off-hand estimation from the qualitative examination alone. The same amounts of the reagent and of the urine should, of course, always be employed, and it is convenient to mark the conical glasses accordingly. When it is desired to gain

an insight into the amount of albumin eliminated in the twenty-four hours of the day, all the urine voided during this time should be carefully collected and a specimen taken from this collected amount for examination. Decomposition may be guarded against by placing in the receptacle about one tablespoonful of chloroform.

The cloud at the zone of contact may be due to serum albumin, serum globulin, albumoses or a mixture of these bodies. As serum globulin is always present when serum albumin is found, and as a pure globulinuria has thus far not been observed, its significance is the same as that of serum albumin. If we wish to ascertain whether or not the precipitate contains albumoses, a small amount is removed with a pipette and heated over a spirit lamp or a Bunsen burner. Should albumoses only be present the cloudiness disappears, and the liquid in the presence of nitric acid turns a deep yellow color. Upon cooling, however, the precipitate reappears. In the presence of a mixture of serum albumin, serum globulin and albumoses, only a partial solution occurs, and the yellow color is not so marked.

A pure albumosuria is of special interest in so far as its existence should lead the physician to anticipate the appearance of serum albumin. Albumosuria may also alternate with true albuminuria.

A very important feature of this test, furthermore, is the fact that it furnishes an insight into the amount of uric acid eliminated. In order to obtain results of value, however, it is necessary always to work with specimens of urine taken from the collected amount of the twenty-four hours. If uric acid be present in excess a distinct wafer-like band, resembling albumin in its general appearance, will be observed in the clear urine *above* the zone of contact of the nitric acid and the urine. Should albumin be present at the same time it will be noticed that this band is separated from the albuminous ring by an intermediary zone of perfectly clear urine. If this point be remembered confusion will never arise, and it will not be necessary to study the effect of heat upon the individual precipitates in order to ascertain their true nature. If the uric acid ring does not appear after from five to ten minutes, it may be assumed that the substance is not present in increased amount, and that the quantity in all probability is even less than normal. As a general rule the band appears almost at once after the addition of the nitric acid, if an excessive elimination of uric acid has taken place, and from the rapidity with which it appears and the depth of the ring an idea may be formed of the amount present, if the method has been carefully compared with one of the usual quantitative methods.

Occasionally, though rarely in the writer's experience, amounts of uric acid are encountered in the urine which are truly enormous, and almost immediately after the addition of the nitric acid a band of uric acid appears, which almost fills the entire bulk of urine and even extends to the nitric acid. Upon careful examination, however, it may be seen that the extension of the precipitate takes place from above downward, and not from below upward, as in the case of albumin. Should both be present in very large amounts at the same time, the decision, whether we are dealing with uric acid, or albumin, or both, may at first appear extremely difficult. The nitric acid should then be added through a pipette, and not allowed to flow along the walls of the vessel. Two bands can then always be made out for a few seconds at least, the one at the zone of con-

tact, the other separated from this by an intermediary zone of practically clear urine.

If an increase in the amount of uric acid is observed, it should be ascertained whether this increase is only relative or absolute. It will readily be understood that the diagnosis of an absolute increase is only justifiable if the amount of urine is not subnormal. The increase, so frequently observed in febrile urines, is usually of a relative character, the total amount of urine being subnormal. A sharp line of distinction should, furthermore, be drawn between increased production and increased elimination. It is thus not justifiable to exclude the diagnosis "uric acid diathesis," when normal or even subnormal amounts are obtained. A temporary retention is frequently observed.

The subject of uric acid elimination is one of the most interesting and practically important in clinical medicine, and the writer would suggest this topic to his colleagues as a most promising one for careful investigation. It is a wide field, and one upon which the general practitioner, with very modest laboratory facilities even, may be able to accomplish a great deal of practical as well as theoretical value. It is thus quite likely that the constant elimination of relatively, not necessarily absolutely, increased amounts of uric acid will ultimately lead to definite anatomical alterations of the kidney structure, but the question still requires a great deal of careful investigation. The general practitioner can do more in this respect than the hospital physician, because he is able to follow his patient's history for a very much longer period of time.

An excess of urea is likewise quite readily discovered with the nitric acid test. Every physician probably, who has occasion to examine many urines, has observed the appearance of glistening crystals after the addition of the nitric acid, if the specimen has been allowed to stand for a few minutes. These crystals are urea nitrate, and when formed in this manner always indicate the presence of at least 25 grammes of urea for every 1,000 c. c. of urine. When occurring in dense masses 50 grammes or more are being eliminated.

In conclusion, the nitric acid test, when applied as described, indicates the presence or absence of bile pigments, as well as the presence of increased amounts of indican. A dark blue or violet ring is only found when indican is eliminated in large amounts, and as this, generally speaking, only occurs when an increased degree of intestinal putrefaction exists, we have thus a fairly accurate index by which to measure the latter.

It is thus seen that with this simple test a large amount of valuable information may be obtained, but the writer wishes to emphasize that the question of technique in clinical diagnosis is only of secondary importance. Above all the physician must learn to *interpret* his results.

VALUE AND LIMITATIONS OF BLOOD EXAMINATION FOR DIAGNOSIS.

By Richard C. Cabot, M. D.,
Boston, Mass.

Only a part of the data at present obtainable for blood examination is of value in the clinical diagnosis and prognosis of disease. Some of these data, as, for example, the degree of alkalinity, or the rapidity of clotting, might give us useful information, if there were any method known by which they could be estimated with accuracy and at the same time without an expenditure of time too great for the clinician to spare. Other

facts, such as the amount of sodium, potassium or phosphorus in the blood need so much blood that the inconvenience to the patient is greater than is justified by the significance of the result. Still other pieces of information, such as the thickness of the fibrin-network or the estimation of the solid residue, although clinically available, do not give us as a rule any information which cannot be obtained in simpler ways.

Such data as *are* at once fairly easy to obtain and of diagnostic or prognostic value, may be for convenience' sake arranged in the following divisions:

1. Data obtained by the search for *bacteria* or *animal parasites* in the blood.

2. Data obtained by ascertaining the number, kind and condition of the blood corpuscles.

3. Data obtained by examination of the blood serum.

4. Data obtained by testing for certain micro-chemical reactions in the blood.

5. Data obtained by examination of the blood as a whole; *i. e.*, its physical properties.

I.—*A.* The bacteriological examination of the blood by cultural methods is occasionally of value in the diagnosis of

(*a*) Malignant endocarditis and other forms of septicæmia (puerperal, gonorrhœal, etc.);

(*b*) Leprosy.

In diseases, such as typhoid, pneumonia, anthrax, bubonic plague, glanders and others, bacteria are not infrequently to be found, but not often enough to make it likely that the search for them will ever come into common use.

In prognosis—the presence of bacteria in the blood of any disease, except leprosy and relapsing fever, means death or metastatic processes—usually the former.

The organisms of relapsing fever and of leprosy, to which cultural methods are not applicable, occur in the blood in such large numbers that their presence can be readily made out in cover-slip preparations, which are inapplicable to other diseases, on account of the small number of organisms present in the blood. In relapsing fever the organisms are seen only during the paroxysms, but the serum examination (*vide infra*) usually enables one to detect the disease in the absence of the organisms themselves.

B. Among the animal parasites which may be found in the blood the only ones of importance in this country are:

1. The malarial organism.
2. The filaria sanguinis hominis.

II. *Blood corpuscles.*

1. Their number.

(*a*) The count of red corpuscles gives us information: On chlorosis, pernicious anæmia and secondary anæmia, on the presence of internal hemorrhage and the amount of any hemorrhage, such information having prognostic as well as diagnostic value.

(*b*) The number of white corpuscles, supplemented by a study of the varieties present, gives us a great many helpful diagnostic points to be mentioned in the next section.

2. *The kind and condition of the corpuscles.*

(*A*) *Red corpuscles.*

We note in fresh or stained cover-slip preparations:

(*a*) The amount of coloring matter in the corpuscle (low in chlorosis and most secondary anæmias, high in most cases of pernicious anæmia).

(*b*) The size of the corpuscles (small in chlorosis and secondary anæmia, large in pernicious anæmia, as a rule).

(*c*) The shape of the corpuscles. They are deformed in most severe anæmias of any type and represent a marked grade of the disease, rather than any particular kind of disease.

(*d*) The presence or absence of nuclei. Nuclei in normal sized cells may be present in any marked anæmia. Nuclei in abnormally large cells (megaloblasts) indicate the severest grades of anæmia, and when forming a majority of the nuclated corpuscles present, they point to pernicious anæmia.

(*e*) Degenerative changes in the corpuscles, shown by altered micro-chemical reactions, will be referred to later.

(*B*) *White corpuscles.*

On the kind of white corpuscles which predominate among those present depends our diagnosis of

(*a*) Leucocytosis,

(*b*) Lymphocytosis,

(*c*) Eosinophilia,

(*d*) Myelocytæmia,

according as the polymorphonuclear cells, the lymphocytes, the eosinophiles or the myelocytes are increased.

(*a*) *Leucocytosis.*

Physiological in the new born, during digestion, pregnancy and the moribund state, and after the working of certain vaso-motor influences (heat, cold, violent exercise, massage, etc.). Leucocytosis is found under pathological conditions in most infectious diseases *except typhoid, tuberculosis, influenza, measles, mumps, malaria and leprosy.* These exceptions are very important and enable us to exclude from view in our differential diagnosis elements which otherwise could not be excluded. It is often present in malignant disease and constantly in deep-seated non-tubercular suppuration.

Certain toxic influences (uræmia, gas poisoning, etc.) and various drugs (pilocarpine, nuclein, antipyrine) also produce it.

(*b*) Lymphocytosis, when excessive, is characteristic of lymphatic leucæmia. Relative lymphocytosis, *i. e.*, without increase in the total leucocyte count, occurs in various anæmias (pernicious, post—hemorrhagic, chlorosis) and many debilitated conditions from various causes.

(*c*) Eosinophilia is most marked in trichinosis, bronchial asthma, certain skin diseases and some sarcomata.

(*d*) Myelocytæmia is the most striking feature of splenic-myelogenous leucæmia. In trifling degree it is also found in a great many diseases associated with leucocytosis and anæmia.

Serum Diagnosis.

The specific reaction of typhoid blood serum on typhoid bacilli is one of our most reliable signs in the diagnosis of typhoid. In cholera, the bubonic plague, Malta fever, relapsing fever and some other rare infections, the test is of value, the serum of each disease reacting on the bacilli of that disease in a specific manner.

Under the head of micro-chemical blood reaction more or less valuable clinically, we have:

1. Signs of anæmic degeneration in the red corpuscles.

2. The iodine reaction in the leucocytes of patients with acute suppurative processes.

3. The various reactions in diabetic blood.

1. In very severe grades of anæmia, especially in pernicious anæmia, the red cells show a decreased affinity for acid stains (eosin, etc.) and an increased affinity for basic stains (methylene blue, etc.), so that in a specimen stained with eosin and methylene blue the red cells are some of them stained purple, instead of pink, while with Ehrlich's triacid stain they are brown or gray, instead of yellow. This condition is easily simu-

lated by the effects of errors in technique, and is significant only when these can be excluded.

2. The iodine reaction.

Iodine	1
Pot. iodidi	3
Water	100

Gum arabic to syrupy consistency.

Spread a little of this mixture on a slide and press a cover-slip preparation of blood face downwards into it. (The cover-slips are simply dried in the air and not fixed.) The corpuscles of normal blood show only various shades of yellow when so treated, but in acute advancing suppurative processes the polymorphonuclear leucocytes show more or less of a *brown* discoloration of their protoplasm, either diffuse or in lines and spots.

3. Reactions in diabetic blood.

Bremer has shown that cover-slip preparations of diabetic blood, heated to 135° C., stain differently from normal blood with various stains, of which Congo red and methylene blue are the most satisfactory. Normal blood stains red with Congo red, while diabetic blood stains yellow. With methylene blue normal blood comes out blue, and diabetic blood greenish yellow.

Williamson's test consists in boiling a drop of blood with methylene blue and caustic potash in the following proportions:

Blood	1
Methylene blue (Aqueous sol. 1–6000)	5
Liquor potass	200

If the blood is from a diabetic patient the blue is decolorized to a pale yellow. With normal blood the color remains unchanged.

The value of this test (as of the foregoing) is still under debate, but it is asserted that diabetes can be recognized earlier in this way than in any other.

Physical Properties of the Blood.

The specific gravity.

In most conditions the specific gravity of the blood varies, as does the hæmoglobin, so that either may be approximately estimated through the other. It is often more convenient to test specific gravity than the amount of coloring matter, the inferences from the former being similar to those from the latter. In heart disease and other conditions of concentrated peripheral blood (cyanosis) the gravity is very high, while in the anæmias it is low.

Coagulation and fibrin formation.

Relatively rapid in most suppurative and septicæmic conditions, in pneumonia and rheumatism; also in chlorosis.

Cancer, which has no effect on fibrin formation, may sometimes be distinguished from abscess when the fibrin network is dense, and quickly formed.

Spectroscopic examination.

The presence of methæmoglobin in the blood in cases of poisoning by chlorate of potash, antifebrin and nitrite of amyl. In CO_2 poisoning the presence of carbonic-oxide—hæmoglobin can be similarly detected.

In conclusion I subjoin a list of the diseases in which most help can be derived from the blood and of those in which practically no help can be obtained from it:

Blood examination essential.

Malaria,
Relapsing fever,
Chyluria, Lymph scrotum, Elephantiasis, } Due to filaria sanguinis hominis.
Leucæmia,
Pernicious anæmia,
Hodgkin's disease,
Chlorosis,
Trichinosis.

Blood examination often valuable.

Typhoid fever,
Pneumonia,
Deep-seated suppurations,
Malignant diseases, especially gastric cancer,
Concealed hemorrhage,
Septicæmia,
Grippe,
Measles,
Pleurisy and empyema,
Peritonitis,
Meningitis,
Illuminating-gas poisoning.

Blood examination occasionally valuable.

Diabetes, bronchitis, chicken-pox, scarlet fever, yellow fever.

Blood examination usually not helpful.

Disease of the heart, liver, kidneys, digestive organs, diseases of the nervous system and those usually classed as "constitutional diseases," tuberculosis, syphilis, hemorrhagic diseases, diphtheria.

THE VALUE AND LIMITATIONS OF EXAMINATIONS OF THE GASTRIC CONTENTS IN DISEASES OF THE STOMACH.

By Max Einhorn, M. D.,
New York.

Since Leube, in 1876, began to analyze the gastric juice in disorders of the stomach for diagnostic purposes, this new procedure has steadily been more developed and made more useful. The chemical examinations of the gastric contents are so well known and are, moreover, so fully described in textbooks on diseases of the stomach, that it would be entirely superfluous to discuss them here. To briefly elucidate the subject of the value and limitations of the examinations of the gastric contents, appears to me to be timely and of great interest. While a large number of practitioners hardly ever avail themselves of these examinations, there are some who exaggerate their importance. The golden way lies, however, between these two. If these examinations are made in appropriate cases they yield most fruitful results. If practiced indiscriminately they may often prove valueless.

The question now arises, When are examinations of the gastric contents necessary and when not? On the whole, I would say that they may be omitted whenever we are able to arrive at a positive diagnosis without them, and in all acute conditions, the latter generally tending to amelioration in a short while. They are further not absolutely necessary in chronic conditions which are apparently improving under the established regimen, and in the majority of purely nervous affections of the stomach. In cases in which there is suspicion of an ulcer, the tube should be used with utmost care, and, if possible, should be replaced by the stomach-bucket. In cases of ulcer with hemorrhage it is best to forego either the tube or the bucket. Cases with symptoms pointing to a certain secretory disorder (as, for instance, hydro-chlorhydria, gastro succorea continua periodica or chronica) may first be treated without a verifying examination of the gastric contents, but if this treatment prove unsuccessful, an examination of the gastric contents should be made.

The large field in which these examinations of the gastric contents are necessary comprises all chronic affections of the stomach with doubtful diagnosis and which show but slight evidences of improvement. The examinations may help us to recognize the following conditions:

1. Chronic gastric catarrh: acidity diminished, the ferments present, free

HCl, variable; mucus present in a large number of cases.

2. Achylia gastrica: total absence of gastric juice, no HCl, no ferments, total acidity very low, almost neutral.

3. Cancer of the stomach: in many instances incipient cancer of the stomach may be recognized by the constant presence of the following symptoms: free hydrochloric acid, absent; lactic acid, present; acidity not especially low, sometimes increased; mucus; sometimes small amounts of blackish-looking blood and stagnant food.

4. Hyperchlorhydria: free HCl present; acidity between 70 and 140.

5. Gastro succorea continua chronica: presence of about 60 to 100 c. c. of clear gastric juice in the stomach in the fasting condition.

6. Erosions of the stomach: presence of a few small pieces of the gastric mucosa in the wash water of the stomach in the fasting condition.

7. Ischochymia: presence of food in the stomach in the fasting condition.

Often the examination of the vomited matter may do away with the need of obtaining the gastric contents by artificial means. It is, however, readily understood that the vomited matter may occasionally fail to furnish exact data upon the condition of the gastric secretion, as it is mixed with mucus from the œsophageal walls and the mouth.

While the results of examinations of the gastric contents are useful in aiding to establish the diagnosis in gastric disorders, it is hardly necessary to say that we should not rely upon them alone. We must always combine all the data concerning any given case before arriving at a conclusion. It is only in this way that examinations of the gastric contents will be of great aid to us in helping to establish a more positive diagnosis, and in thus facilitating the treatment.

CORRECTION.

Dr. Andrew Stewart calls the attention of THE REVIEW to the fact that the pipette described by him in the January issue, page 222, is 3-16, and not 5-16 inch inside diameter, as was incorrectly stated.

Progress of Medicine.

On the Diagnostic Significance of Small Quantities of Sugar in the Urine.

In a recent number of *Der Aerztliche Praktiker* appeared an exhaustive and able article by M. Loeb, which is of high interest to the practitioner in general and to the diagnostician in particular. It deals with the two forms of glycosuria—temporary or transitory, and chronic glycosuria or diabetes mellitus. The author subdivides the transitory form further into two classes: 1, pathological, and 2, physiological glycosuria. In the first class he groups those cases in which the excretion of glucose is a symptom secondary to others of specific diseases, such as cholera, diphtheria, scarlet fever, malaria, typhus, influenza, and, most important, brain and nerve derangement. The second class comprises the glycosuria of pregnancy and the puerperium, and that of alimentation. He points out that the glycosuria of the pregnant is generally of physiological origin; the carbohydrate found in the urine under such conditions is not necessarily glucose, but, in many cases, lactose.

Touching on testing for sugar in general, he calls attention to the astonishing frequence of positive results, where, at the time, there may be absolutely no other symptom of disease noticeable. In this connection he elaborates somewhat on the methods of testing, and rather gives his preference, in point of accuracy and delicacy, to Nylander's modification of the bismuth sub-nitrate test. It detects the presence of from 0.1–0.05 per cent of glucose.

On the much mooted question of whether or not sugar is a constituent of normal urine, Loeb points out that it

has been found therein in only the most minute quantities, citing Moritz, who (working with such enormous quantities as 17 litres and more of normal urine at a time) was able to determine glucose in quantities not exceeding a few ten thousandths of one per cent. He considers it only, then, proper to speak of a glycosuria when the reaction with the urine is positive to such well-known tests as are usually employed in the laboratory: *i. e.*, Fehling's, Trommer's, Einhorn's, Nylander's, etc.

Alimentary glycosuria, according to Loeb, is that consequent upon the ingestion of 200–250 grams or more of sugar; the elimination of glucose by the kidneys, in the event of such a sudden saccharine supersaturation of the blood, is not to be confounded with an excretion of, by reason of and consequent upon, errors of metabolism, as in diabetes mellitus.

He points out the importance of the fact that starch is transformed into sugar and excreted as such by diabetic patients alone. By this means true diabetes mellitus may often be differentiated from a transitory glycosuria (particularly alimentary glycosuria), a task not always very simple. He, however, regards the presence of sugar in the urine as a foundation for the gravest suspicion of diabetes mellitus, and advises examiners for life insurance companies to reject all applicants whose urine reacts with any of the above-given tests, in no matter how small a degree.—Loeb (M.) Aerztl. Prakt., Würzburg, 1897, x, 585, 625, 659.

Contribution to the Ætiology of Diabetes Insipidus.

Bandler remarks that the number of cases in which it is possible to demonstrate, with more or less certainty, that syphilis stands in any ætiological relation to diabetes insipidus, is limited. He reports a number of published instances in which such connection has seemed to exist, and adds a case of his own, where there was an extraordinarily well-marked diabetes insipidus in an individual with hereditary syphilis. The point of special interest was the rapid fall in the quantity of urine from 9000 c. c. to 2000 c. c., which ensued upon the administration of mercury and iodide, coincident with improvement in the syphilitic lesions.—Bandler (V). Centralbl. f. Chirurg., Leipz., December 25, 1897, xxiv, 1319.

The Urine of Normal Infancy.

Carrière and Monfet recently presented to the Academy the results of their examination of the urine of 54 infants, aged 15 months or less, and presenting all the appearances of good health. Some of their conclusions were, that infants secrete more urine proportionately than adults; that the specific gravity is a little higher; that the acidity is more pronounced; that in infants the renal secretion indicates that all the metabolic processes are more active, reaching their maximum between the 5th and 10th years, and that the classical figures which indicate the character and composition of the urine in adults are not applicable in the case of children.—Carrière (C). et Monfet. Journ. de méd. et de chirurg., Paris, December 25, 1897, xviii, 941.

Typhoid Fever—Infection in Hospital.

Guinon has called the attention of the société médicale des hôpitaux to the cases of three children of 5, 6 and 12 years respectively, who, from 20 to 40 days after admission to hospital with other affections, first showed signs of typhoid fever. In each instance a positive serum reaction was obtained and the disease was well marked. The ward in which these children were placed upon entrance, contained many grave cases of typhoid, was badly ventilated and lighted, and much crowded. The patients had drunk no water, but only milk and tisanes.—Guinon (M. L.) La semaine méd., Paris, December 15, 1897, xvii, 461.

At a subsequent meeting of this society, Netter reported five similar cases observed in the Hospital Trousseau, where the time between admission and the development of typhoid fever rendered infection in the hospital almost certain. In these instances, linen soiled by typhoid dejecta was considered responsible for the conveyance of infection. In this same institution 27 cases in all of typhoid fever have developed in patients after a stay of more than three weeks.—Netter. La semaine méd., Paris, December 22, 1897, xvii, 472.

An Improved Method of Diagnosticating Diabetes from a Drop of Blood.

Bremer, in a recent letter to the editor of the *New York Medical Journal*, states that he has simplified his method, elsewhere described, so as to place it within reach of every physician, whether he is familiar with hæmatological work or not. "Briefly stated, the mode of procedure is as follows: Prepare two sets of blood specimens, one of diabetic, the other of non-diabetic blood, the films to be spread in rather thick layers on cover-glass slips or slides. The latter are preferable for naked-eye demonstration, because they are more easily handled. Place the two sets, say eight or ten of each, in a heating oven, the tray on which they rest to be at least six inches above the bottom of the apparatus. By means of a good sized gas flame, run the temperature up to 135 C. (this being the heat optimum) within from eight to ten minutes. After cooling, place two slides, one with a diabetic, the other with a non-diabetic blood film, back to back, in a one per cent aqueous solution of any of the stains above named for from two to five minutes." These stains are Congo red, methyl blue, and Biebrich scarlet. "Then rinse thoroughly in distilled water or filtered water and dry. It will be found that the Congo red and methyl blue have not stained the diabetic blood, or on prolonged exposure have stained it feebly, whereas the non-diabetic blood film has assumed the red or blue stain respectively. Biebrich scarlet has the opposite effect: it stains the diabetic but not the non-diabetic blood, unless the specimens remain too long in the reagent. The solutions ought to be freshly prepared, old ones losing the differential staining capacities."

Bremer affirms that this test is more reliable than the sugar test, or at least enables one to arrive at definite conclusions, when the ordinary sugar tests furnish only ambiguous results. He believes that there is a peculiar change in the hæmoglobin of the red blood corpuscles in diabetes, the exact nature of which is unknown, that accounts for this phenomenon.—Bremer (L.) Anent the Blood Test of Diabetes by Means of Aniline Colors. *New York Medical Journal*, Dec. 11, 1897, lxvi, 808.

A New Diagnostic Feature in the Urine.

According to the Berlin Letter of December 15, 1897, to the *Medical Record*, Dr. Rosin, a short time since, demonstrated to the Berliner medicinische Gesellschaft a new diagnostic feature in the urine.

"A man, thirty-six years of age, had, at the commencement of his illness, much albumin in the urine; later, however, there was present propeptone (albumose) only to the amount of six per cent. The patient died, and the autopsy showed an amyloid kidney and multiple myelogenic sarcoma of the ribs. A review of the literature of the past fifty years disclosed the fact that in the six reported cases in which propeptone existed in the urine the patients had either osteomalacia or sarcoma of the ribs. We may therefore regard a positive relation as existing between albumosuria and this class of sarcomata; perhaps it is permissible to regard this condition as diagnostic of sarcomata."—*Medical Record*, N.Y., January 1, 1898, 33.

A Case of Tetanus Complicating Ulcers of Leg Treated With Antitoxin; Recovery.

Smyth reports a case in which tetanus occurred in an individual who had two chronic leg ulcers; and, although the specific organism evidently found entrance through these lesions, no definite facts could be ascertained as to the exact mode of infection nor the period of incubation. Eleven injections of serum were given, but since other treatment was employed it was difficult to determine just what benefit was derived from its administration. It was observed, however, that after several of the injections there was a distinct diminution in the spasms and amelioration in the general condition of the patient.—Smyth (E. J.), *Lancet*, London, December 18, 1897, ii, 1583.

A Case of Pregnancy and Labor After Abdominal Myomectomy.

Woyer gives the history of a patient from whom a uterine myoma, weighing 6¾ kg., was removed in 1884. The tumor was probably a large subserous growth with a short pedicle, which, after the abdominal section, was treated extraperitoneally. The abdominal wound healed except for a small fistulous tract

which communicated with the uterine cavity. The woman subsequently became pregnant, and at the time of delivery the fistula dilated more rapidly than the cervix, and meconium escaped therefrom. The muscular contractions of the uterus resulted in the expulsion of the (dead) child in the usual manner, and not through the abdominal opening, which was evidently the direction of least resistance. For some time after delivery the fistula remained patulous, and gave vent to a part of the lochial discharge, but subsequently contracted so as to admit only of the passage of a very fine sound.—Woyer (G.), Monatsschrift f. Geb. u. Gynækol., Berlin, 1897, vi, 563.

Successful Removal of a Large Mesenteric Tumor and Nearly Eight Feet of Intestine

Shepherd reports the case of a man, aged 28 years, who had a smooth, hard, quite movable tumor, which filled the whole abdomen from the ensiform to the pubes. He had never been ill nor suffered pain. On opening the abdomen it was found that there was a large mesenteric tumor with considerable adhesions to the small intestine and to the transverse colon. The mass, with three feet of ileum, was removed, and also about two feet at each end of the severed gut, which, through the ligature of the mesenteric vessels, had its circulation cut off. The ends of the bowel were united and the rent in the mesentery closed. The patient made an uneventful recovery. Wyatt Johnston, who examined the specimen, reported that the tumor was a fibromyxoma weighing 5250 gm. (13 lbs.). The portion of the intestine removed was 234 cm. (7 ft. 8 in.) long, and consisted of the ileum down to within a few inches of the ileo-cæcal valve. The author refers to the paper of Harris and Herzog, of Chicago, giving the details of the reported cases of mesenteric tumor, 57 in number. In 18 cases operation was performed with 10 recoveries. Of the 57 cases, 16 were carcinomata, 10 lipomata, 7 sarcomata, and the rest fibromata and lymphomata. In only 3 of the operative cases was it necessary to remove portions of the intestine—in one case 20 cm., in another about 109 cm., and in the third 51 cm. Shepherd, (F. J.,) *Montreal Medical Journal*, Mont., Dec., 1897, xxvi., 590.

Glycosuria In Primary Cancer of the Pancreas.

Bard and Pic, in an elaborate study of this subject, refer to a previous contribution of theirs, in which they maintained that cancer of the pancreas was accompanied by a group of symptoms sufficiently characteristic to admit of a diagnosis being made with as much certainty as in malignant disease of any of the other viscera. These symptoms arrange themselves in two groups—the positive and the negative. Among the first are emaciation, rapidly developing cachexia, bronze color of the skin, distention of the gall bladder and sometimes pain and epigastric tumor. As negative signs there are to be noted no increase in size of liver and spleen and absence of ascites. Glycosuria, one of the supposed classical accompaniments of cancer of the pancreas, was not met with in the course of their observations, and they do not regard it as one of the cardinal symptoms of that affection. They maintain that true diabetes is independent of pancreatic cancer, but in some measure predisposes to it; and *per contra*, the development of the neoplasm causes a diminution and disappearance of the diabetic phenomena.—Bard (L.) and Pic (A.), Rev. de Méd., Paris, Dec. 10, 1897, xvii, 929.

Further Post-Mortem Notes of Cases of Death Under Anæsthetics.

Mollison reports three deaths which occurred under anæsthesia in the Melbourne Hospital during the past year. In one of these, ether was administered; in the other two, a mixture of ether and chloroform. An autopsy was performed in each instance. The author ascribes the fatal termination in all to a primary asphyxial condition, due to some cause or other, followed by failure of an enfeebled heart.—Mollison (C. H.) Intercolonial M. J. of Australasia, Melbourne, 1897, ii, 670.

Surgeon General Wyman states that up to November 10 there were 4,198 cases of yellow fever in the South, with 423 deaths.

The National Medical Review,
PUBLISHED MONTHLY.

George W. Johnston, M. D., Thomas E. McArdle, M. D.,
Editors and Publishers.

The National Medical Review,
No. 1437 L St. N. W., Washington, D. C.

WASHINGTON, D. C., FEBRUARY, 1898.

WATER METERS.

Any means that will prevent the unnecessary waste of water should receive the commendation of every thoughtful citizen. Water is not always wasted, however, when it is permitted to flow freely through the pipes. In Utopia water will be as free and as abundant as air, and a measure to restrict the unlimited use of either will be greeted with ridicule. It cannot be denied that there is an ample supply of water furnished to the inhabitants of Washington for all legitimate purposes. But despite this large supply, it must be granted that there is such an overwhelming needless waste as to call for some correction. It is well known where this great waste exists. The large public buildings, for which no water rates are paid, are the most flagrant offenders. Strange, too, as it may seem, two at least of our hospitals have been grossly negligent in this regard. It is proposed to correct these abuses by the introduction of meters into every building in the District of Columbia. We believe this to be a fundamental error. It will throw the onus of saving water upon the poor or those of moderate incomes, just the ones who should be encouraged to a more liberal use of water as an aid to cleanliness. It will be very impolitic to place people in the position of counting the cost of every bath. If water is to be doled out by the gallon, how will the poor washerwoman eke out an existence? If water cannot be as free as air, at any rate let us not put so many restrictions upon its use as to constitute it a luxury. It will doubtless be the act of wisdom to place meters in all public buildings, in order to discover the needless waste of water and devise means of correction; but to place meters in private houses would involve the needless expenditure of a million dollars that could be put to much better use in increasing the purity of the water supply by filtration, and moreover the introduction of such meters would prove sadly detrimental to the public health.

The other day, in glancing through a recent French medical journal, we came across a report on the bacillus of diphtheria. It said that in one case the organism had been found in the patient's throat one year after the subsidence of the disease. We wondered if that individual had lived in Washington whether his house would have been placarded for twelve months. When we read the weekly reports from the Health Office we would infer from the number of houses posted that there is an epidemic of diphtheria in this city. From experience we know that such is not the case. Cannot the authorities devise some means by which the mental and physical distress, together with great pecuniary loss, consequent upon the protracted presence of a so-called danger signal, may be materially lessened? Experience proves that the bacillus of diphtheria is by no means uncommon in the throats of many children who attend our large schools, and yet the disease is fortunately comparatively rare. Should not every effort be made to differentiate the pseudo bacillus from the true organism? We feel certain that the last word has not been said on this subject, and that the time will come when our people will not be subjected to such needless anxiety and monetary disaster.

News Items.

Something New in American Medical Journalism.

Beginning with the number for March, 1898, the REVIEW will contain each month a Supplement devoted to Military Medicine, Surgery and Hygiene, edited by Col. William H. Forwood, Assistant Surgeon General, U. S. A. The matter in this Supplement will be of interest to every Military and Naval Surgeon, whether he be in the service of the Federal or State Government.

Also, beginning with the March number, there will be a department of Clinical Diagnosis (chemical, bacteriological and microscopical), under the charge of Dr. Charles E. Simon, of Baltimore (whose work upon this topic is well known to every physician in the country), and Andrew Stewart, Ph. D. (Leipzig), of Washington, D. C.

Army Changes. Colonel Dallas Bache, Assistant Surgeon General, will be relieved from duty as Chief Surgeon, Department of the Platte, on January 20, 1898, and will repair to Washington, D. C., and report in person to the Surgeon General of the Army, to assume charge of the Museum and Library Division of his office; to enter upon duty April 10, 1898, as Professor of Military Medicine in the Army Medical School, to which he is assigned accordingly.

Leave of absence from or about February 1 to April 10, 1898, is granted Lieutenant-Colonel David L. Huntington, Deputy Surgeon General, Surgeon General's Office, Washington, D. C.

The leave of absence granted Major Louis Brechemin, Surgeon, Fort Sherman, Idaho, is extended two months.

Leave of absence for one month on surgeon's certificate of disability, with permission to leave the Department of the East, is granted Major Charles K. Winne, Surgeon, Fort McHenry, Maryland.

Major Egon A. Koerber, Surgeon, Fort Crook, Nebraska, granted leave of absence for one month, to take effect about January 4, 1898, with permission to apply for an extension of two months.

The leave of absence granted Major Egon A. Koerber, Surgeon, Fort Crook, Nebraska, is extended two months.

Captain Peter R. Egan, Assistant Surgeon, is relieved from duty at Fort Hamilton, N. Y., and assigned to duty at Fort Hancock and the Sandy Hook Proving Ground, N. J., with station in New York City, and will make daily visits to and between those points until he shall be furnished with suitable quarters at Fort Hancock.

The leave of absence granted Captain William O. Owen, Assistant Surgeon, is extended one month.

Leave of absence for two months, with permission to go beyond sea, to take effect April 1, 1898, is granted Captain Charles F. Mason, Assistant Surgeon, U. S. Military Academy, West Point, N. Y.

Captain Charles F. Mason, Assistant Surgeon, U. S. Military Academy, West Point, N. Y., granted leave of absence for two months and seven days.

First Lieutenant Alexander S. Porter, Assistant Surgeon, is granted four months leave of absence.

First Lieutenant Deane C. Howard, Assistant Surgeon, will be relieved from duty in the Department of Dakota, when his services are no longer required at Fort Custer, Mont., and will proceed to Fort Crook, Neb., and report for duty at that post.

Some of the Recent Additions to the Library of the Surgeon General's Office:

Laveran (A.) Traité du Paludisme Paris, Masson et Cie., 1898. Rüdinge (N.) Führer bei den Präparirübungen. München, Fr. Bassermann, 1897. Leopold (G.) Geburtshülflicher anatomischer Atlas 30 Tafeln enthaltend zu Uterus u. Kind, etc. Leipzig, S. Hirzel, 1897. Bensaude (R.) Phenomène l'agglutination des microbes. Paris, Georges Carré et C. Naud, 1898. Laforgne (L.) L'Art du dentiste. Paris, 1802. Budin (P.) et Crouzat (E.) La pratique des accouchements. 2nd. ed. Paris, Octave Doin, 1898.

Traité de chirurgie publié sous la direction de Duplay (S.) et Reclus (P.) 2nd ed., Paris, Masson et Cie , 1898. Garnier (P.) Internement des aliénés. Paris, Rueff et Cie., 1898. Variot (G.) La diphthérie et la serumthérapie. Paris, A. Maloine, 1898. Möbius (P. J.) Ueber die Tabes. Berlin, S. Karger, 1897. Duclaux (E.) Traité de microbiologie. Paris, Masson et Cie., 1898. Petrus de Abano. Folio. Venice, 1483.

Paget (S.) Ambroise Paré and His Times. New York and London, G. P. Putnam's Sons, 1897.

Monod (Ch.) and Vauverts (J.) L'Appendicite. Paris, Masson et Cie.

Redard (P.) Le torticollis et son traitement. Paris, Georges Carré et C. Naud, 1898.

Sanson (A.) and Trasbot (L.) Supplement au nouveau dictionaire pratique de médicine, de chirurgie et d'hygiène véterinaires. Premier Supplement A–D. Paris, Asselin & Houzeau, 1897.

Tardieu (A.) étude médico-légale sur l'avortement, 5th ed. Paris, J. B. Baillière et fils, 1898.

Barré (L. A. & P.) Manuel de génie sanitaire. La maison salubre. Paris, J. B. Baillière et fils, 1898.

Tscherning. Optique physiologique. Paris, Georges Carré et C. Naud, 1898.

Prize Essay.

The Review has notified the Deans of the several Medical Schools in this city that it has offered a prize to be competed for under the following conditions:

1. The fourth-year students of any of the Medical Schools of the District will be eligible for the prize.

2. An original article, of not more than twenty-five hundred words, on any medical or surgical subject, must be submitted to the editors on or before May 1, 1898.

3 Each paper must have a motto and the author's name must be inclosed in an accompanying envelope inscribed with a duplicate motto.

4. In awarding the prize, the value of points will be given in successive order to originality, thoroughness and literary style.

5. The editors reserve the right to publish the prize essay, as well as such others as they may deem of sufficient value.

Moullin holds that urinary rigors are a form of septic poisoning, due mainly, if not entirely, to the bacillus *coli communis*.

Notices and Reviews.

HUGH WYNNE, FREE QUAKER.—By S. Weir Mitchell. The Century Company, New York, 1897.

Everyone who has followed the career of Dr. Weir Mitchell is fully aware of the versatility of his genius. A doctor who stands in the front rank of his profession, a poet of no mean merit, an essayist who commands the attention of his readers, he has at last crowned his literary labors by the production of a novel which will find an abiding place in English literature. The limited space at our command renders it impossible to review this book as we would like to do. As a means of recreation its perusal will furnish both pleasure and profit. As a study of pure classical English we commend it to every thoughtful seeker after literary style. Interest in the story is maintained from the first page until the last, and every thought in every line of the two volumes is couched in language so choice and elegant as to prove a pleasure from beginning to end.

RUBÁIYÁT OF DOC. SIFERS.—By James Whitcomb Riley. The Century Company, New York, 1897.

No doubt Mr. Riley intended these verses as a compliment to the medical profession. In our opinion, however, they signally fail to serve any such purpose. Whatever the versifier's intention, his conception of a physician's true character is chiefly remarkable for its inaccuracy, and the development of his life story is crude and vulgar. Compared to McLaren's beautiful story—but, alas! there is no comparison, no basis upon which to make a comparison. Some people may like Doc. Sifers. Indeed, it is possible that some people might like a man who would permit himself to be called Doc. We do not.

W. B. Saunders, of Philadelphia, will shortly issue an English edition of Lehmann's Hand Atlases; an American Text Book of Genito-Urinary and Skin Diseases (edited by Bangs and Hardaway); Van Valzah and Nisbet's Diseases of the Stomach; Keen's Surgical Complications of Typhoid Fever; Chapin's Compendium of Insanity; Gould's Year Book for 1898; Moore's Orthopedic Surgery, etc., etc.

OUTLINES OF RURAL HYGIENE. For Physicians, Students and Sanitarians.—By Harvey B. Bashore, M. D., Inspector for the State Board of Health of Pennsylvania. With an appendix on The Normal Distribution of Chlorine, by Prof. Herbert E. Smith, of Yale University. Illustrated with twenty (20) engravings. Extra cloth, 75 cents net. The F. A. Davis Co., Publishers, 1914-16 Cherry St., Philadelphia; 117 W. Forty-second St., New York City; 9 Lakeside Building, 218-220 S. Clark St., Chicago, Ill.

We wish to commend this little book to the careful consideration of every doctor who has a summer residence in the country; likewise to every practitioner in the rural districts. It is replete with facts of the greatest possible interest, and a close observance of the lessons taught will prove of great value in the saving of life.

ELEMENTS OF LATIN. For Students of Medicine and Pharmacy.—By George D. Crothers, A. M., M. D., Teacher of Latin and Greek in the St. Joseph, Mo., High School; formerly Professor of Latin and Greek in the University of Omaha; and Hiram H. Bice, A. M., Instructor in Latin and Greek in the Boys' High School of New York City. Flexible cloth, $1.25 net. The F. A. Davis Co., Publishers, 1914-16 Cherry St., Philadelphia; 117 W. Forty-second St., New York City; 9 Lakeside Building, 218-220 S. Clark St., Chicago, Ill.

We are of the opinion that the college, and the college only, should be the stepping stone to the study of the liberal professions. Until that day comes, however, we must be content with the so-called preliminary examinations. As these are supposed to include a few questions on the elements of Latin we know of no book from which the student can derive greater profit than the one before us.

Therapeutic Notes.

Protargol.—Dr. A. Eichengrun says, that while up to a few years ago silver nitrate was regarded a sovereign remedy in the gonorrhœal catarrhs of mucous membranes, in latter times those silver compounds have gradually gained in popularity, which do not possess the properties of the other silver salts of forming insoluble precipitates with albuminous bodies, and hence are capable of penetrating the tissues and destroying the colonies of gonococci in the deeper layers. The most important combination of this new class of silver preparations is Protargol. It is a light yellow powder freely soluble in water. In the treatment of acute gonorrhœa excellent results have been derived from the use of one-quarter of one per cent, rapidly increased to one and one and a half per cent.

Phthisis—Winter Coughs.—A well-known physician of Pennsylvania, in a very instructive paper on Phthisis, declares that thousands of lives have been sacrificed whilst demonstrating the worthlessness of many so-called specifics. Standard remedies are the best, and prominent amongst these is nature's own remedy—Petroleum. The Angier Chemical Co., of Boston, have placed this remedy in our path in palatable form, combining with it the well-known Hypophosphites. This Emulsion supersedes cod-liver oil in more ways than one, not the least of which is, that it is palatable; consequently, does not disorder digestion or produce nausea. The Emulsion is antiseptic, antispasmodic, stimulant, diaphoretic, nutrient and expectorant.

Constipation.—Dr. J. D. Albright, of Pottsville, Pa., in a recent contribution, declares that, without doubt, the most frequent departure from the normal state of health is found in the alimentary tract. The one great danger to be feared from constipation is auto-intoxication. When ptomaines are set at liberty in the human organism, they produce headache, coated tongue, numb and cold extremities, cardiac irregularities and a general feeling of malaise. For the alleviation of constipation no drug meets the requirements better than Senna. The California Fig Syrup Co. has recognized the value of this drug, and has given it the foremost position in their elegant and efficient preparation, which they have named Syrup of Figs.

The Lofoten Islands and their Principal Product.—Parke, Davis & Company have just issued a handsome brochure, descriptive of the Norwegian cod-

fisheries. Every doctor in the land is concerned in the production of pure cod-liver oil. It is doubtful if there is an article employed in medicine of more general usefulness. Cod-liver oil has been used for centuries for almost the same purpose and in the same way as at the present. Parke, Davis & Company's Improved Lofoten Cod-Liver Oil represents the first attempt to exhibit a palatable form of this nutrient remedy in its integrity and purity. They offer a perfect emulsion, containing forty per cent cod-liver oil emulsified with eggs alone, and flavored only with brandy.

Of Timely Interest.—Much attention is given to stomachic conditions in throat and chest diseases, and catarrhal affections. Malnutrition and stomachic derangements are largely responsible for the obstinate coughs of winter. Gray's Compound Glycerine Tonic quickly dissipates the depression and debility so common in these cases. It soothes irritated tissues, controls coughs and relieves dyspnœa. There are no depressing after-effects, and the stomach receives positive aid. It is of special value in chronic ailments.

Made in America.—The supplementary collective investigation of the American Pediatric Society, which embraced more than seventeen hundred cases of unmistakable laryngeal diphtheria, showed conclusively that the antitoxin which is now most generally employed and which yields the highest rate of recoveries is a domestic product, Mulford's Concentrated Diphtheria Antitoxin. Seventeen hundred and four cases were reported, of which forty per cent were treated with Mulford's. In these cases the mortality was about one-third less than in the cases treated with all the other antitoxins combined.

Obstinate Constipation.—Dr. E. T. Bainbridge, of Lickton, Tenn., has prescribed Chionia four times a day in a case of long-standing obstinate constipation. The first three nights he directed a hot-water enema to be given every night. This treatment resulted in a complete cure.

Weak Heart.—Dr. C. B. Matthews, of Kent, Ind., takes pleasure in testifying to the great value of Cactina Pillets in cases of weak and irregular action of the heart. He uses them in all cases of typhoid fever and pneumonia, and in four years he has never been disappointed in Cactina Pillets.

Good Sleep.—December 29, 1897. To the Imperial Granum Company, New Haven, Conn. Dear Sirs: I have raised my baby on Imperial Granum, and no healthier child can be found in the city. She is three years old, weighs thirty-six pounds, and still has two meals a day, consisting almost wholly of Imperial Granum. Her last meal at night is Imperial Granum only. It gives good sleep and no nightmare. I know of no food that is as good for babies and children. —— ——, M. D. Literature and samples for chemical tests supplied only to physicians and trained nurses. Sent free, charges prepaid, on request.

Desired Results.—New York, April 3, 1883. I have used Syr. Hypophos. Comp., McArthur. Having tried others and not receiving the desired results, I, a couple of years ago, commenced upon your syrup, and I am happy to state that I did find my patients benefited. I had many with pulmonary diseases and symptoms in almost every form, having made those diseases a specialty in the city of New York for nearly a quarter of a century. Yours fraternally, G. W. Lovatt, M. D., 48 West 12th Street.

A Winter Remedy.—Bartholow says that the power of Codeine as a nervous calmative is due to its action on the pneumogastric nerve. Codeine controls excessive coughing without arresting secretion in the respiratory and intestinal tract. The coal-tar products have great power as analgesics and antipyretics. Laboratory experiments show that some products of the coal-tar series are safe, while others are dangerous. Antikamnia has stood the test and is now generally acknowledged as the safest and surest. Five-grain "Antikamnia and Codeine Tablets," each containing four and three-quarter grains of Antikamnia and one-quarter grain of Sulphate of Codeine, afford a very desirable mode of exhibiting these drugs.

The Medical Society of the District of Columbia is responsible only for the "Transactions" published in this journal. It is entirely free from any connection with the Editorial and Business management.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M. D.

MEETING OF OCTOBER 20, 1897. Dr. S. C. Busey, President, in the Chair.

KAISERLING'S FLUID.

Dr. Larkin W. Glazebrook exhibited a number of specimens illustrating the method of preserving with Kaiserling's fluid. The following was the formula given in the *Berliner Klinische Wochenschrift* for August 31, 1896:

℞

Formalin.....	750 c. c.
Potassii Nitratis..	10 grammes.
Potassii Acetatis.	30 "
Aquæ.....	1000 c. c.

The specimen is to be allowed to stand 24 hours in this solution. Then it is placed for 12 hours in 80 per cent alcohol; next, in 95 per cent alcohol, and finally it is preserved in the following:

℞

Glycerine.....	500 c. c.
Potassii Acetatis.	50 grammes.
Aqua.....	500 c. c.

The advantages claimed for this method of preparation are: (1) It preserves the transparency of the specimen. (2) It does not absorb any coloring matter from the blood. (3) It acts quickly and may be used over and over again. It is probable that the minute structure of the specimen remains unaltered in the fluid for an indefinite time. The method has not been in use a sufficiently long time, however, to warrant a positive statement in this regard. (4) The method is simple and inexpensive. The gray and white matter of the brain retain their normal appearance; hemorrhages are readily seen, etc.

DISCUSSION.

DR. LAMB said: The question in my mind regarding the successful use of the Kaiserling method is as to the future result of the preservation in glycerine, which is not a good preservative, and how these specimens will look in future years.

DR. GLAZEBROOK said: As to the permanency of the preservation of the specimens, Kaiserling advises that the fluid be kept in a dark place, because exposure to light injures the action of the fluid, and that he was now experimenting with specimen exposed both to daylight and to artificial light.

A PLAN FOR THE ESTABLISHMENT OF A MILK LABORATORY IN THE CITY OF WASHINGTON.

BY S. S. ADAMS, M. D.

The members may remember that in 1891 I presented to the Society a plan for the sterilization of milk, having secured for the purpose one of the most

complete dairies in the country. After securing the farm and calling to my assistance Mr. Clifford Richardson and other scientists, we finally produced a good quality of milk. Just as the plan began working to our satisfaction, the owner of the farm returned, and finding that we had discontinued the use of the refuse from his brewery for feeding the cows, said that everything would have to stop unless I agreed to use this refuse. Of course, I refused to do this, so that after spending $2,000 or $3,000 in sterilizing apparatus, it is now standing in the dairy rusting.

Last spring Dr. Busey sent a gentleman to see me, a Dane, who was familiar with dairies and dairy products and had come to the city for the purpose of introducing pasteurized milk. I found that the Dane was an employe of Mr. Newbold, a gentleman of some means, who was willing to establish a milk laboratory here. After a number of conferences with him and with Mr. Newbold on the subject we concluded that the best thing to do would be to solicit the co-operation of Drs. Kober and De Schweinitz, but during the summer the matter was dropped. After my return to the city Newbold again asked my support, saying that Drs. Kober and De Schweinitz were willing to do their part in supervising the establishment of such a dairy. The plan which he presented I rejected, however. It was a plan which the Dane had conceived for sterilizing milk in bulk at the farm to be sent to the city and opened and distributed. I showed him that sterilization was all right as long as the can was unopened, but if he opened the can it was worse than if he had left it alone, for instead of being sterilized it then becomes a good culture medium. Captain Newbold has secured the co-operation of a practical dairyman in the neighborhood of Washington who will stock his farm with a healthy herd, build a good barn and have the floor concreted, and use every possible precaution to deliver pure and wholesome milk. The Captain will secure a place in this city where we will have the advantages of cold storage, plenty of ice and plenty of steam for power and pasteurization, with absolute cleanliness and hygienic surroundings. The milk will be separated by the centrifuge. In this way the milk will not only be free from impurities, but we will get milk that has 4 per cent fat, and I have never seen milk delivered that came up to that standard.

A complete laboratory will be established later, where it will be possible to have milk made up according to the proportions written for, just as it is in the Walker-Gordon laboratories. There is no reason why we, here in Washington, should be put to the expense of having foreign capital come in and prepare a high-priced milk. The milk prepared in the Walker-Gordon laboratories is too expensive and costs at the rate of about $30 a month for an 8-months-old baby.

The milk farm, and the persons connected therewith, will be under sanitary control of Drs. Kober and De Schweinitz. The cows are to be tested with tuberculin, and the feeding and care of the animals, together with the care and cleanliness of the dairy utensils, will be closely watched by frequent and unannounced inspections. The success, of course, of the scheme will depend upon the support which the medical profession gives it. If we do not intend to support it we might as well tell Mr. Newbold to keep his money out of the venture. Dr. Kober presented last year a paper to this Society, in which he showed the filthy character of the milk delivered in this city, and I have made some experi-

ments, simply by filtration, and I was surprised at the dirt I found in the milk we use. With the use of the centrifuge all that will be eliminated. The price of the milk will be ten cents a quart, that is only two cents a quart more than I pay now and the same price that the Bellevue Dairy charges. Pasteurized milk will be two cents more per quart, with four per cent of cream. This is not intended to be a Nathan Strauss laboratory, but Mr. Newbold says that as soon as the income equals the expenditures he will put in a larger plant and give the poor people milk at low rates. I met Dr. Osler last Monday and he told me that the success of the laboratory in Baltimore was most surprising. I am thoroughly convinced of the integrity of the moneyed man of the undertaking and of the intelligence of the Dane, and with Dr. Kober and Dr. de Schweinitz superintending the details and working to give Washington pure milk, I hardly think that anything more is necessary; but to add weight to the undertaking I suggest that the Society appoint a committee to supervise the work and report to the Society whether or not it is worthy of our support. This is, to my mind, the best opportunity we have had for securing a pure milk supply.

Dr. G. L. Magruder said: There is an interesting article in the New York *Medical Journal*, of October 9, on the result of experiments made in 1896 in Yonkers, to give that place a pure milk supply. The improvement in the death rate of children was remarkable in a short time. Newburg, where the bulk of the milk obtained is not over twelve hours old when delivered, had the next best rate, while Long Island City, Hoboken and other places had woeful mortality rates. But the business in Yonkers was run at a loss of $1,000 in four months last year. They furnished pure milk, pasteurized, in eight-ounce bottles, to the poor at two cents, and milk and lime water at a cent for six-ounce bottles. Every possible precaution was taken to insure the cleanliness and purity of the milk, such as the bathing of the attendants, the wearing of milking suits, etc. All this Mr. Newbold will, as I understand, require, and as soon as this is announced he will not be able to furnish enough milk for the demand.

Dr. S. C. Busey said: The Chair understands that this is a proposition coming from a gentleman depending upon his own resources for the establishment of a laboratory where milk may be prepared as an article of diet, and medical men should be aware of it, and give their support to it or not, as they choose. Dr. Adams submits a proposition that a committee of this Society shall be appointed, not that they shall control it but that they shall inspect it, and that if the Society chooses it may have that committee report to it whether this system is good, and whether we are gaining anything by this increase in the price of milk, but in no way is there any responsibility on the Society or any obligation upon any member of the Society to take the milk. It is very desirable that we should encourage any effort for the establishment of a laboratory or milk dairy that will give us milk such as we ought to have. If any man will go to a hearing before a committee of the House or Senate when this matter is being investigated, he will come to the conclusion that we do not get milk that is fit to go down our throats. The District of Columbia is unfortunately situated in this matter, surrounded as it is by Virginia and Maryland, for there are not enough dairies within the limits of the District to supply one-tenth of the population. We cannot pass laws, nor can Congress pass laws, regulating or controlling the dairies in Virginia and Maryland, so we will have to pass laws here requiring all milk coming into the District of Columbia to come up to a certain standard, and in this we meet constant opposition. I am impressed with our duty to the people at large, and I think that if we can encourage a man who is willing to furnish a standard milk we should do so.

Dr. Thomas A. R. Keech said: I find

a great many people who will not drink milk, and I believe that this arises from a knowledge of the filthy character of the milk that we get in this city. I suppose every member of the profession knows the difficulty in infant feeding of getting suitable milk. The consequence is that many order or advise condensed milk. Now, what possible means have we of knowing that condensed milk is clean? We do know that condensed milk is not fit to feed children upon; it is not a suitable food. It is well known to every physician that the milk that we get here is far below the standard. We even have difficulty in feeding sick people. Of course milk is the diet almost universally ordered for persons with typhoid fever, but I believe, from my own observation, that many people die annually in typhoid fever from starvation, simply because we cannot get suitable milk, so that when I am attending a case of typhoid fever I often get them to get cream and add it to the milk, because I know that ordinary milk will not sustain and nourish. We cannot all go and see after the sanitary requirements of dairies, but we can appoint a committee whom we can depend upon.

Dr. Acker moved that Drs. Kober, De Schweinitz and Adams be appointed a committee to investigate the methods proposed by Captain Newbold in the establishment of a dairy and to report to the Society from time to time, as may suit their convenience. Carried.

MEETING OF OCTOBER 27, 1897.

Dr. S. C. Busey, President, in the Chair.

FIBRINOUS BRONCHITIS.

Dr. Charles Lewis Allen presented two specimens of fibrinous bronchitis, with the following history:

A previously healthy girl of seven years was taken sick, November 18, 1889, with nausea and pain in the left side. The next day she had grown worse, vomited several times, and had fever and cough. I saw her first at 1 P. M., November 20. She had then a flushed face and considerable dyspnœa, T. 103.3; P. 150; R. 60. There was slight dullness, and a few fine rales below the left clavicle, with slightly higher pitched respiratory sound over the dull area. Below this the percussion note was rather tympanitic, otherwise there was nothing abnormal. Early on the morning of the 21st she had a sudden attack of dyspnœa, and coughing brought up cast I, 3″ x 3-16″, resulting in immediate relief. At 1 P. M. she seemed better; T. 102, P. 144, R. 50. The physical signs remained the same as on the previous day. November 22, child much better; T. 97, R. 36. On the morning of the 23d, after a similar attack of dyspnœa, she coughed up cast II, 2½″ x ¼″. Section shows fibrin in layers and leucocytes. When visited at 1 P. M. her T. was 98, P. 104, R. 40. The dullness at the left apex persisted, and there was now slight dullness over the base of the right lung, and a few coarse and fine rales diffused over both lungs. She seemed well and bright. After this she steadily improved, and by December 4 was quite well, all abnormal physical signs having disappeared. At no time could the most careful examination detect any membrane in her throat, nor did she have any albuminuria.

Remarks:

In the course of diphtheria and lobar pneumonia it is not rare for casts of the bronchial tubes to form and to be expectorated, but it occurs as an idiopathic disease. Fibrinous bronchitis is very infrequent. In 1889, Dr. Samuel West, of London, collected all the cases reported since 1869. He found them to amount to 52, the majority being of the recurrent type. He himself had seen but one case. The acute form is much rarer than the chronic, and children are very much less frequently attacked than

adults. As to the etiology of the disease, nothing positive is known. Its onset is usually like that of an ordinary bronchitis, except that the symptoms may be more severe, dyspnœa being more marked. It sometimes begins, however, with a rigor, pain in the side and high fever. Before the expectoration the diagnosis is not possible.

SPLENIC LEUKÆMIA.

Dr. Walter Reed presented specimen of a case of splenic leukæmia, with the following history:

Patient enlisted in the Army December 1, 1895, and was discharged January 26, 1897. He came to the Soldier's Home January 31, 1897. His father was killed by an accident. His mother died of inflammation of the bowels. His brothers and sisters are living and well. Patient had malarial fever when a boy, eighteen years ago, and ordinary children's diseases, otherwise enjoyed good health. He denies venereal disease, and states that he never had any bowel trouble (except costiveness) and no hemorrhages. In the latter part of March, 1896, he was taken with feverishness, general malaise, loss of appetite, nausea and vomiting, pains in bones and back, and severe cough. On March 24, after being ill for two or three days, he was admitted to the hospital at Fort Logan, Col. He continued to be very weak and to have pains in the back. His fever was of a remittent type, at intervals of two or three days, rising as high as 104° Fah., with irregular chills, and continued five or six weeks. About the end of this febrile period his spleen began to enlarge, the pain in the back diminished, and he remained very weak and suffered dyspnœa on exertion. At Fort Logan his disease was diagnosed "chronic malaria and muscular rheumatism." On June 29, 1896, he was sent to Hot Springs, Ark., where the diagnosis of leukæmia was finally made. He was treated with Warburg's tincture and with arsenic, but without much improvement. His spleen continued to enlarge, and he continued weak and subject to severe dyspnœa on exertion. He was discharged from Hot Springs January 28, 1897. On admission to Barnes Hospital February 2, 1897, he weighed 140 pounds (20 pounds less than when taken ill). He complained of weakness, some pain in the back and left side, and dyspnœa, but he was rather stronger and in better condition than he had been for some weeks past. The spleen was palpable as a hard mass, filling nearly the entire left half of the abdomen and extending about five centimeters beyond the median line to the right side. The heart and lungs were normal. His color was somewhat paler than normal. The lymphatic glands were not enlarged.

His condition from February to June, 1897, remained about the same as on admission. He was able to go about the grounds, to the city, etc. On June 11 he went away from the Home for the summer. He was readmitted to the hospital September 22, 1897, much worse in condition. He had had occasional nose-bleed during the previous two months. His lower extremities were œdematous. Urine was diminished in quantity (about 300 to 600 c. c. per day), urea was much decreased in amount; urates increased but albumin was absent. On October 19, 1897, a trace of albumin was present in the urine. His temperature was somewhat irregular, but did not exceed 100°. A few days after admission diarrhœa set in, which continued persistently in spite of all treatment. He gradually grew weaker, and from October 18 sank rapidly and died of exhaustion October 20, 1897.

Autopsy was held three hours after death; body emaciated; spleen much enlarged, 28 x 19 x 12 centimeters; liver enlarged, 28 x 25 x 14 centimeters; left kidney larger, pale; mesenteric and pericardial tissues œdematous; about 250 c. c. of serum in pericardium; small intestine slightly congested; there was a diverticulum from the ileum; the colon was studded with large numbers of small ulcers, more numerous toward the rectum, less numerous in cœcum and ascending colon; lymphatic glands not enlarged; bone marrow bloodless; spleen, colon, intestinal diverticulum, adrenals and portions of liver, kidneys and tibia sent to the Army Medical Museum October 20, 1897.

DISCUSSION.

Dr. George W. Johnston said that he was glad to have an opportunity of seeing the post-mortem specimens in this case, since on February 23, 1897, he had examined the blood of the patient from whom they had been subsequently removed. With the permission of the Society, he would like to read the following from the blood count made at that time:

Hemoglobin (von F.)—57 per cent;
Number of red cells per cb. mm.—2,740,000;
Number of leucocytes per cb. mm.—304,600;
Proportion of leucocytes to red cells—1 to 8.995;
Differential count of leucocytes:
Small mononuclear—1.48 per cent;
Large mononuclear—2.00 per cent;
Transitional—0.60 per cent;
Polymorphonuclear—33.68 per cent;
Eosiophiles—2.53 per cent;
Myelocytes—59.71.

There were also large numbers of nucleated red corpuscles, the megaloblasts predominating.

Dr. Johnston remarked further that these figures were interesting in themselves and also because of their similarity with those obtained by Dr. Reed. The picture presented by the blood was that typical of spleno-myelogenous leukæmia.

Dr. A. F. A. King said: The subject of leukæmia is especially interesting, because we are unable to treat it successfully. Since leucocytes destroy micro-organisms, it might be an interesting experiment, were it justifiable, to inject bacteria into the blood of a leukæmic subject and note whether the large number of leucocytes would so far increase phagocytosis as to protect the system from bacteric infection.

Dr. Walter Reed said: I should be afraid to try Dr. King's suggestion upon human beings. We do not know what the injection of bacteria into the blood of human beings suffering with leukæmia might do, especially as the polynuclear elements are much reduced. I agree with Dr. Carr that patients with leukæmia are more liable to abscesses, etc. However, leukæmia is not confined to human beings; the lower animals have this disease, and if we could only get hold of a leukæmic dog Dr. King's suggestion might be tried very easily.

ENDOTHELIOMA OF THE CEREBELLUM.

Dr. E. L. Tompkins presented a tumor of the cerebellum with the following history:

A white boy, aged 16; had always had good health. His mother stated that he had never had convulsions. About three months or more before I saw him he had complained of severe, but not constant, occipital headache, which was worse after arising from the recumbent position, and also of persistent vomiting without known cause. He claimed to be weak in his right leg. The objective symptoms were a tottering gait, reeling always toward the right; he had to be supported most of the time; exaggerated knee jerks with ankle clonus well marked, of the left side; to a less extent, of the right; nystagmus of both eyes; choked disk of both eyes and slight mental hebetude.

A diagnosis of tumor of the cerebellum was recorded. He continued to grow

steadily worse, and on August 31, 1896, I was sent for and found him in a dying condition; pulse good, but respiration very difficult. I performed a post-mortem examination the next morning, assisted by Dr. Taliaferro Clark, and found the tumor as here presented. I took it to Dr. Reed, of the Army Medical Museum, for examination, and a letter from Dr. James Carroll pronounced it an endothelioma. A small portion has been cut out for microscopic sections.

CARCINOMA OF THE UTERUS.

Dr. Adajah Behrend presented a specimen with the following history:

Patient 63; mother of four children; no syphilis or struma; parents died of old age. Examination showed that externally the uterus looked healthy. At this time there was a slight purulent discharge. Treated her for about two months and thought the case was improving, as the discharge became less. Never had pain or hemorrhage. She then went to the seashore and returned in the early part of September, when I found the discharge of a very offensive, purulent character. As the whole disease was intra-uterine, I recommended removal of the organ, as a septic fever which I at first thought malarial, was noticed.

DISCUSSION.

Dr. Jos. Taber Johnson said: I want to draw attention to the fact that so many cases of this nature are allowed to run on until they have passed beyond help, and Dr. Behrend deserves credit for suspecting malignancy and advising an early operation.

In all cases of hemorrhage occurring during the change of life, it is a good plan to have a thorough examination made to determine the true character of the disease. The percentage of recoveries following operation for cancer is increasing year by year. Reeves Jackson, ten years ago, declared that surgeons killed more patients than the cancers, but if the case be operated upon sufficiently early, it is a safe operation.

Dr. Walter Reed, in answer to an inquiry as to the nature of the cancer cell, said the inquiry is entirely pertinent. He wishes to know how we tell a carcinomatous cell from the cell of sarcoma. Those tumors are made up of unlike tissues and are unlike in origin, the former being derived from epithelial elements and the latter from the connective tissue group. As a rule, there is no difficulty in distinguishing epithelial cells from connective tissue cells. As to the structure of the growth in the uterine wall of Dr. Behrend's case, a section of which I have examined, it is not easy to say whether the cells are of epithelial or connective tissue type. While the cells stain like those of sarcoma, and some have even a spindle shape, yet the general arrangement of the structure is such as to lead me to pronounce this a carcinoma. I think that the strands of invading cells can be traced up to the mucous membrane.

Dr. Adajah Behrend said that while in certain cases a diagnosis might be made from the aspect of the case or from the scrapings of the uterus, yet when the disease was situated in the upper portion of the fundus, as in this case, it could not be seen and there was too much danger of pushing the curette through the softened wall of the fundus. We can only watch the case, and if we become satisfied from the negative symptoms that the case is one of cancer we should call in a surgeon and request an operation.

GENERAL TUBERCULOSIS.

Dr. George N. Acker presented specimen of a case of general tuberculosis.

DISCUSSION.

Dr. Behrend asked whether there had been any tubercular lesions in the lungs.

Dr. Acker replied that there had been; the case was one of general tuberculosis.

Dr. Allen asked whether there had been any symptoms of tubercular laryngitis.

Dr. Acker said that there had not been. The child presented certain heart symptoms, was dull and could not learn and had frontal headache. There was no paralysis of the cranial nerves. There was one important feature about the case, and that was that it gave Widal's reaction, which led to the belief that the case might be one of double infection.

Dr. Glazebrook: The specimens having been preserved in formalin, hardening them to such an extent, make it difficult to note the characteristics of the ulcers, but from their present appearance they are more like the ulcers of typhoid fever. They have not the gross look of miliary tuberculosis.

It may be of interest in this connection to cite a case which came under my observation a few days ago. It was a child three days old who had died suddenly, and a post-mortem being made, it was found to have general miliary tuberculosis throughout. No ulceration of the intestine. It is not unusual, of course, to find this in a child three days old, but it was an interesting case.

Dr. Walter Reed: I would suggest that this is a case of chronic tuberculosis with an acute miliary outbreak. At all events, I do not see any reason why we should not so consider it. There were cavities in the lungs, and in some way the bacilli may have found their way into the general circulation. If these intestinal ulcers occupy Peyer's patches and the blood gave Widal's reaction, it would be extremely interesting to examine the ulcers under the microscope. I will be very glad if Dr. Acker will give me the opportunity of so doing.

Dr. Acker, in closing the discussion, said: I do not think there was any doubt about the tubercular nature of the ulcers. I did not see them at the post-mortem examination, and they had been in formalin 10 hours when I saw them. At that time they presented the ordinary appearance of tubercular ulcers such as we are accustomed to see in general miliary tuberculosis. We did not find anything that was not characteristic of miliary tuberculosis.

At 9.30 o'clock the Society adjourned.

MEETING OF NOVEMBER 3, 1897.

Dr. S. C. Busey, President, in the Chair.

CANCER OF PANCREAS, FOLLOWED BY DILATATION OF BILIARY PASSAGES.

Dr. D. S. Lamb reported the following:

The specimen consists of a portion of liver, pancreas, etc.; the liver is stained a dark green by the retention of the biliary constituents from mechanical interference with the discharge of bile through the common duct; all the larger biliary passages, including the hepatic and cystic ducts, and also the gall bladder, are much dilated; the common duct, one inch from the duodenal opening, is narrowed and bent from pressure of a cancerous tumor of the head of the pancreas.

The woman died July 23, 1897. There was intense jaundice everywhere, both within the body and without; some emaciation; brain not examined; heart normal; old adhesions of right lung everywhere; œdema and hypostatic congestion of left lung; liver much enlarged and as described; spleen about natural size, congested; stomach, intestines and kidneys normal; urinary bladder empty; uterus and appendages atrophied; small fibroid of uterus.

BILATERAL CONGENITAL ANOPHTHALMUS.

By W. H. Fox, M. D.

In presenting this paper before you to-night, I wish to say that it lays little or no claim to original research, but is a collection of facts and theories from different authors, and I hope it may find its excuse in the fact that this literature

is widely scattered, and mostly in special journals, seldom seen by the general practitioner. I have tried to collate these papers, and bring their information under various heads, so that we could form some conclusions on the cause, prognosis and treatment of this unfortunate deformity.

My attention was first called to this subject two or three years ago, by a case being brought to my clinic at the Children's Hospital. Since then I have looked up the literature more or less, and my paper to-night is the result of that search.

Possibly I should say one word on my title. It is "Bilateral Congenital Anophthalmus," but before we finish you will find that it has been widened a little so as to include certain cases of extreme microphthalmus, where the two forms come so closely together that it often takes a post-mortem to determine which is the one present; and also some reports on unilateral cases which throw light on our subject.

You will pardon me, if, for a few moments, I take you over ground that is already familiar to you, but in order to fully understand certain theories propounded later, it is necessary that we should spend a short time in looking at the development of the eye.

The eye is one of the earliest organs to be differentiated in the fœtus, being easily determined in the third week of embryonic life. The first development of the organs of sight is in the form of two pear-shaped hollow vesicles, which grow out laterally from the anterior part of the first brain bladder. They soon make their way downward and lie under the "'twixt brain," as Hæckel calls it, with which they communicate through their stalks. Pushing outward they come in contact with the outer skin covering. Here a thickening of the skin layer takes place, which later becomes grooved. This groove gradually closes, and the thickened portion separates from the skin in the form of a closed sac, forming the crystalline lens of the eye. By thus growing backward the lens has been investing the primary eye vesicle, at first nearly filling its cavity, lying almost directly upon the retina (the inverted portion of the primary eye vesicle). A little later, but still during the first few weeks of life, there is a second process takes place to form the vitreous. A ridge of the skin-fibrous layer, below and behind the lens, gradually forms and pushes itself into the eye between the lens and the retina, thus making what is called the secondary eye vesicle. Hæckel's[1] description of the eye at this time makes it so clear that I quote a paragraph or two. He says:

"Thus the primary eye vesicle assumes the form of a hood. The opening of this hood, answering to the face, is covered by the lens, but the opening through which the neck would pass answers to the indentation through which the leather-skin passes in between the lens and the retina (the inner wall of the hood). The space within this secondary eye vesicle is almost filled by the vitreous body, which answers to the head wrapped in the hood. The hood itself, properly speaking, is double, the inner hood itself is the retina, and the outer one, directly surrounding the former, is the pigment membrane."

This lower opening forms what is known as the choroidal fissure or cleft, and has been supposed to play a large part, as we shall see, in occasioning certain forms of micro and anophthalmus.

The rest of the development of the eye does not concern us so much. The choroid and sclerotic form outside this secondary eye vesicle, and envelop it;

and later, about the third month, the lids appear.

Now that we have seen how the normal eye develops, let us see what we find when there has been some irregularity in this process.

The term anophthalmus explains itself, but we find this deformity to be of various types.

According to Galezowski[2] we have three distinct classes of this anomaly:

First. The orbital cavity completely wanting. (In these the bone is in direct contact with the skin and the latter drawn smoothly over it, showing no palpebral fissure.)

Second. The orbital cavity present, filled with fatty-cellular tissue (*"tissu cellulo-graisseux"*). No palpebral fissure present.

Third. Orbital cavity present. Palpebral fissure present. Eyeball rudimentary, in the form of a stump, or entirely absent.

Hocquart[3] divides this third class into those absolutely without an eyeball, and those in which one is present, no matter how small and rudimentary. He uses the term "cryptophthalmus" for the latter, but this has also been used for those rare cases in which the eyeball is quite large and is only "hidden" because there is no palpebral opening. It is better, therefore, to consider these as—

Fourth. Extreme microphthalmus. These last may be again subdivided into those in which there is a cyst of the lower lid, with or without a rudimentary eye, and those without cysts; making—

Fifth. Extreme microphthalmus, with cyst. These cysts present, at the lower lid, a bluish, fluctuating surface. They are nearly always connected with the stump of an eye by a stalk, which may be open and the two cavities connect, or it may be only a fibrous band. On dissection these cysts usually show tissue, more or less resembling the retina, lining their cavity wholly or in part, but with the retinal elements in an inverted position. Although these divisions are clear enough for practical purposes, we find it impossible to draw hard-and-fast dividing lines. Liebreich[4] reports a case as follows:

Child eight days old, comparatively well grown, heavy and fully developed, showed no other abnormality. Eyes closed, could not be separated. Narrow slit of eyelids were bordered with lashes, showed only a small opening from which tears flowed. Immediately behind the eyelids the bone was felt, forming a slight depression. There was no orbit, but instead of this a bony surface, uniting the supra and infra-orbital borders, which lay very near each other. This is clearly a case to be put in the first class, and yet we find both lids and lachrymal glands present.

Our second class is very similar to the first in outward appearance, but behind the smooth skin we find an orbital cavity, filled up with cellular tissue, in the place of an eye. This condition is known as "ablephasia totalis and anophthalmus," while if the eye were present it would be called cryptophthalmus.

These two classes are extremely rare and there is practically nothing to be done for them, so they need interest us only as curiosities of nature. The three remaining classes are very close together and are the common forms which we meet with. We may look upon them as three consecutive stages of arrested development.

The first, our original third, class is where the primary optical vesicle failed to form at all, or, if it did form, never grew far enough to come in contact with the skin layer. Here in post-mortems we find no trace of the eye and often none of the optic nerve or chiasm. As

a type of this class I will report the case that was brought to me.

July 16, 1894, C. J., a colored male infant six weeks old, was brought by his parent to the clinic at the Children's Hospital. He was apparently healthy, well developed, fat and in good condition in every way with the one marked exception of the entire absence of both eyeballs. On examination the following condition was found: Eyelids present, cilia in normal position, upper and lower lids separable for about one-half their extent. Palpebral fissure measured, on right side 20 m. m., on left 17 m. m. No caruncle nor lachrymal punctæ could be made out, but these may have been present, as it was difficult to examine their locality. Lachrymal glands present, as the parents reported a flow of tears when the child cried. On separating the lids the unattached portions were found to be the same length in both, viz: 10 m. m. On palpation, outside the lids, a very small round body was thought to be felt in the right orbital cavity, but nothing of the sort could be made out in the left. Inspection of the cavities showed the same condition in each: a smooth surface, somewhat inflamed, having a slight mucous discharge. The nodule, thought to be on the right side, was not visible, nor was there any protuberance of the tissues to show where it lay. With a probe everything felt smooth to the touch. The family history was good. No specific history; no consanguinity. I saw both parents, who appeared perfectly healthy. They had been married three and one-half years and had had one child before this one, which they said was normal in every way. It died of what they said was whooping cough, or a cold, at three months of age. This last child was born at term, after an easy labor, without instrumental assistance. I could get no history of maternal impression, the mother declaring that everything had gone smoothly during the whole of her pregnancy.

In the next, our original fourth class, the primary optical vesicle has formed, and has even gone so far as to form the secondary vesicle and outer coats of the eye, but is arrested during some of its stages and remains at the bottom of the orbit, in a minute and more or less poorly developed state.

Our last form is the most interesting of all, as it shows the result of the failure of involution of the primary vesicle, or, perhaps, of the closure of the choroidal cleft.

Mitvalsky[5] has given a resume of thirty-eight cases, many being only unilateral, however, and reports two new ones, in an elaborate paper.

Several theories have been advanced to explain these cases, and we will investigate them for a moment.

Arlt[6] holds that these are cases of coloboma of the iris and choroid, with the formation of a large diverticulum, by the bulging of the ocular coats inferiorly, the eyeball proper remaining of rudimentary size. (Mitvalsky.)

Talko[7] concluded that there was no causative connection between the cysts and the rudimentary globe. These cysts formed in intra-uterine life, mechanically obstruct the development of the eye, or hinder it entirely. He considers them as arising by enlargement and entanglement of the upper part of the lachrymal sac, and that they are cysts by retention.

Fromaget,[8] in a very complete paper on lower lid cysts, gives his opinion, based on the literature, but especially on the microscopical examination of the cyst wall, as agreeing with Talko. Manz[9] considered his cases as scleral cysts.

Dor[10] thinks that in fœtal life there was a premature closure of the so-called choroidal fissure, leaving some of the embryonic vitreous outside, which developed into a cyst.

Mitradsky[6] considers this to be a development of the primary optical vesicle and that there has been no involution of it. He says: "The simplest proof of this is the inverted position of the retina, which has been found in every case examined.* The lens or its rudiments cannot be inside the ball, but must lie in the connective tissue coat if there has been no involution of the vesicle, nor can such a ball contain a retina in its normal relations to the pigment epithelium." He also speaks of those cases in which there is a lens in the eye and certain portions of the retina are properly placed. He claims that, in these, the primary vesicle has only partially undergone involution at its anterior portion, while nearer the optic nerve this has not taken place, and this portion becomes distended and forms the cyst. Of these theories the latter seems to me to cover the facts, as we find them, better than any of the others.

Zimmerman[12] reports a case of unilateral anophthalmus which seems to give another cause, namely, external pressure. His case was a man, of thirty-three years of age, whose parents report that he was born with one hand pressing over the empty socket, and that it had a tendency to retain this position for several days after birth. If this position of the hand accounts for the loss of the eye, it must have been due to extensive degenerative changes, for the eye, as we know, is quite well developed when the hand and arm are still scarcely more than a bud.

The various theories that deal with the formation of this anomaly in the embryo itself were then reviewed by the writer.

Among the most reasonable predisposing causes in the parent organism we find maternal impression, heredity and consanguinity of parents.

In anophthalmus, pure and simple, these causes, if they exist, must exert their influence during the first month of pregnancy, for we know that the eye has taken definite shape by the end of the third or fourth week, and in those cases of cyst before the end of the second month, as the choroidal fissure is closed and pigmented by the sixth or seventh week. Hence those reports of maternal impression, where the disturbing event has taken place late in pregnancy, may be neglected.

Lang[13] gives the following list from various sources:

1. Woman in first month frightened at seeing her husband fighting.

2. Frightened by suddenly seeing a person with one eye; first month.

3. Saw a child fall in a fit. It rolled its eyes so far upward as to give the impression of not having any; fifteenth day.

4. Visited a blind daughter at an asylum daily during pregnancy.

5. Frightened by seeing a rattlesnake; kept rubbing eyes and they became inflamed; first month.

6. Visited a dying friend; tenth week.

7. Frightened by a one-eyed man; second month.

8. Frightened by seeing a person with a double hare lip; third month.

9. Attacked by a one-eyed dog; fourth month.

10. Struck in eye; fifth month.

11. Frightened by a cat jumping upon her; fifth month.

Fromaget[8] reports a case of eight-months-old child with congenital cyst of right side and microphthalmus, left,

*Rindfleisch, quoted by Snell,[11] reports one case in which the retinal elements were in normal position.—F.

whose mother gave a history of having seen a child fall and strike its eye, which was followed by much swelling. This during the first month of her pregnancy.

Collins[14] reports a case where the mother in second week of pregnancy saw a runaway, and exclaimed "Oh! they have taken my sight away." The child, a boy, was born with bilateral anophthalmus.

Lafosse[15] records a case in which the mother of the child struck the right side of her face against a door during the fifth month of her pregnancy. The child had right microphthalmus, the eyeball the size of a pea. A remarkable part of this case is, that this child's child was born with complete bilateral anophthalmus.

As to heredity, the case just mentioned seems an example. Not many cases have been reported, however, where there is even a probability of this being the cause.

Arlt[16] reports one case of congenital absence of both eyes, with cysts, in a child whose father had microphthalmus and coloboma of choroid on right and coloboma of choroid left.

Weiss and Ottinger[17] quote the following cases collected from different authors:

Mother in early months of pregnancy had a severe inflammation of both eyes, leaving spots on the corneæ. The infant had, left, anophthalmus, right, coloboma of iris and choroid.

A man who had lost his left eye from suppuration fifteen years before marriage, had two sons, both of whom had microphthalmus left.

They also report two cases of hemeralophia during pregnancy, and in each case the child born had left anophthalmus and right choroidal coloboma.

Samelsohn and Deutschmann have separately made experiments on rabbits as to the transmission of acquired malformations of the eye. Both report that some of the young had serious defects in the eyes, but not necessarily similar to those of the parent.

In this connection, although not due to heredity, it may be interesting to ask if this condition appears more than once in the same family of children. As a rule, it does not, children born before or after the deformed one being normal in all respects.

Some cases have, however, been reported in which such a tendency has been shown.

Monteath, referred to by Collins[14], reports three, in a family of eight, thus afflicted.

Walker[18] reports two sisters, aged 5 years and 4 months respectively, with an intermediate child, a boy, normal.

Hubsch[19] mentions two brothers and Morano[20] gives a remarkable family of five, boys and girls, all born without eyes.

So far as consanguinity of parents is concerned, we may dismiss it as a factor entirely. I can find a reference to but two cases of cousins in all the literature examined.

As to race, I have but two records in colored persons. One reported by Williams,[21] of Charleston, S. C., and the second, my own case, reported to-night.

The large majority of these children are born apparently healthy and robust, and have no other deformity.

So far as sight is concerned, of course there being no eye, or only an extremely rudimentary one, the prognosis is absolutely bad. Strange as it may seem, the prognosis of life is bad also. There seems to be something essential lacking in their constitutions.

The cases have mostly been reported when first seen, and we do not have their further history, but if they had

lived to adult life at least one or two would have wandered into the hands of some practitioner, who would have reported the case. As it is, the oldest case reported was 15 years of age.

In sixty cases, where the affection was bilateral, I find the following:

Under 1 year of age	40	cases.
Between 1 and 10 years of age	11	"
Between 10 and 15	5	"
Over 15	0	"
No age given	4	"
Total	60	"

Of the forty cases under 1 year of age, I find the record of the death of sixteen.

How can we come to the assistance of these unfortunates? As they never reach adult life, we might be inclined not to interfere, and in the first four of our classes this is probably the best course. Certainly in classes one and two we can do next to nothing. In classes three and four, if the patient had passed the early stages of infancy, we might enlarge the palpebral opening and insert an artificial globe, in the hope that its presence might cause a pressure which would induce the orbits to grow somewhat in proportion to the rest of the face and allow the use of artificial eyes later.

Our fifth class is complicated by the presence of a cyst, and here a certain amount of differential diagnosis comes in to affect our treatment.

These cysts are closely simulated by certain other forms, the most important of which are meningocele, hydatids and dermoid cysts. One diagnostic point between these cysts and meningocele is the pulsation of the latter, felt upon palpation.

Our principal method of diagnosis must, however, be the chemical and microscopical examination of the fluid, a little of which should be drawn off for examination before any operative interference is attempted.

Snell[14] gives a comparative table of the contents of these, and from that I take the following as being the most important:

Cyst.	*Meningocele.*	*Hydatid.*	*Dermoid.*
No formed elements. Fluid only slightly oily.	No formed elements.	Little sacs. Rings of marks.	Hair: Fatty globules. Epidermal elements. Cholerhrine plates.
Feebly alkaline.	Alkaline.		
Coagulated by heat; not redissolved by nitric acid. Albumen.	Not coagulated by heat.	No albumen.	
White precipitate with nitrate of silver. Chlorides.	No chlorides.		
No precipitate with Fehling's solution.	Precipitate with Fehling's solution.		

Having now made our diagnosis and found our case to be one of those under discussion, it only remains to decide on our treatment.

If we have to operate, we have the choice of two methods: First, by tapping, which may have to be repeated, and second, by dissecting out the sac, more or less completely.

In these cases, where there can be no question of a useful organ of sight, the latter method seems preferable, but there are cases in which the microphthalmus is not so excessive, and in these some recommend leaving the eye *in situ*, for there is a decided tendency to increase in size in those eyes, after the removal of the pressure of the cyst, and in exceptional cases useful vision has been preserved.

The danger of this operation may seem very slight, but one case is reported by

Harlan[22] of a child of 5 months who died the day following the operation, presumedly of shock.

Gillaux[23] operated on a case of cyst with microphthalmus, in which he wished to save the eye, so he carefully dissected out the cyst, leaving only a small portion that was firmly attached to the ball. This was followed by phlegmon of the orbit; the other eye was threatened with a sympathetic inflammation; the temperature rose to 39.5° C., and for a time the patient's life was in danger. Perfect recovery followed, however, with light perception in the microphthalmic eye. He advises *no* interference in these cases, but should it be considered absolutely necessary to operate, to then remove the cyst completely and the eyeball with it.

Snell[11] reports operating on three cases of cysts. In two he removed a portion of the cyst after tapping, but in the third the reaction after tapping was so alarming that no resection was attempted. In this case, which he tapped twice, vomiting followed immediately, and after the second operation the cyst refilled rapidly, the child became extremely ill, threatened with meningitis, but eventually recovered, and the sac gradually disappeared.

We have now followed these cases from their early embryonic stages until they have received such aid from us as we can give them during their short lives. There remains but the last resort now to learn from them all we can, and that is the post-mortem examination.

Collins[14] has collected nine reports of post-mortems on cases of bilateral anophthalmus. In almost all of these reports we find the external muscles of the eyes present, while the condition of the optic nerve is more or less rudimentary. It may be developed posteriorly and end in a filament in the cellular tissue of the orbit (Lissa[24]) or as a cone at the optic foramen (Bartscher[25]), or as reported by Michel, there may be no optic nerve, no foramen, no chiasm and no corpora quadrigemina. In this latter case, however, the external muscles were wanting also.

These all go to show that we are right in calling the cause of this "non-development," and not "degeneration," of the eye.

From the foregoing I think we may conclude as follows:

Bilateral congenital anophthalmus is due to a failure in the development of the primary optical vesicle during the first month of fœtal life.

Heredity has but slight, if any, influence, but maternal impression early in pregnancy may be more or less effective.

Prognosis unfavorable to life.

Treatment, at best palliative. Probably better not to interfere except in cases of large cysts, and then the radical operation of removing ball and all seems the safest.

REFERENCES.

1. The Evolution of Man. 1879. II, 255.
2. Recuile d'Ophthalmol. 1880. 3d Series, 2, 125.
3. Arch. d'Ophthalmol. 1880. I, 289.
4. St. Thomas' Hosp. Rep. 1873. N. S., VI, 135.
5. Arch. of Ophthalmol. XXII, 355.
6. Zeit. der h. k. Gesel. d. Aerz. zu Wein. 1858. 445.
7. Klin. Monats f. Augenhk. 1872. X, 268.
8. Arch. d'Ophthalmol. 1893. XIII, 321.
9. Graefe's Archives Ophth. XXVI, 154.
10. Revue Gen. d'Ophthal. 1882. 2, 81.
11. Roy. Oph. Hospital Rep. XIV, 190.
12. Arch. of Ophthal. XXII, 340.
13. Royal Oph. Hospital Rep. XII, 291.
14. Royal Oph. Hospital Rep. XI, 429.
15. Arch. of Ophthal. XXV, 49.
16. Wein. Med. Presse. 1885. 245.
17. Arch. f. Augenhk. XXX, No. 1.
18. Lancet. 1832. II, 169.
19. Gazette Med. d'Orient. 1872. XV, 13.
20. Ann. di Ottal. XV, 1.
21. Charleston Med. and Surg. Journ. 1848.
22. Trans. Amer. Ophthal. Soc. 1893. 560.
23. Recuile d'Ophthal. 1888. No. 1, p. 1.
24. Gaz. Med. Ital.
25. Jour. f. Kinderk. XXVI.
26. Michel. Annal d'Ocul. II, 144.

MEETING OF NOVEMBER 10, 1897.

Dr. S. C. Busey, President, in the Chair.

Dr. J. Ford Thompson presented the following specimens:

1. Hydronephrosis.
2. Appendicitis.

DISCUSSION.

Dr. I. S. Stone said that he had had two cases of hydronephrosis somewhat similar to the case reported by Dr. Thompson. One of his cases was a lady who was thought to have an ovarian tumor. She had a very weak, dilated heart, and a large percentage of albumin in her urine, while the specific gravity was not over 1005. She had a very free discharge of urine, but it was highly albuminous. At first she was refused an operation, but she improved under treatment, though the albumin did not disappear. The amount of urea was about one-fourth of the normal amount. Finally the operation was begun for ovarian tumor, but it was found to be not of ovarian, but nephritic origin. He was successful in removing all of the kidney in each of his cases. He said he would like to have Dr. Thompson tell him what to do with the ureter. In his second case it was as large as his finger, and at first he hardly knew what to do with it, though he was tempted to remove it, as Howard Kelly did. However, he stitched it into the wound, and fortunately the patient recovered. After going home she had remained in fairly good health for awhile, but gradually ascites developed and later on anasarca, and she finally died. There was one interesting feature about all these cases, and that was they are almost invariably mistaken for ovarian cysts.

Dr. A. R. Shands said: I would like to say a word about the history of Dr. Thompson's case of hydronephrosis. About a year ago the case came under my observation, and at that time this man's abdomen was so much distended that he was suffering from shortness of breath, and the most desirable thing to do was tap him and give him relief. The fluid that I drew from him amounted to between five and six gallons and was of a dark mahogany color and of such consistence that it clogged the canula.

Dr. G. N. Acker said: The patient, after tapping, remained well for four months, when the tumor enlarged again and then disappeared. The present swelling commenced in June. There was not any pain. The case was clearly not ascitic. The tumor was not movable and seemed to spring from the right side. He did not have any fever at any time. His urine was normal; there were no casts and no albumin. The heart was in good condition. A diagnosis was made of multilocular cyst, and the case was turned over to Dr. Thompson for operation. He did not see how a correct diagnosis could have been made, unless the case had been seen in the beginning. At the post-mortem two cysts were found. The tumor evidently sprang from the pelvis of the kidney, for the ureter was very little dilated.

I. TUMOR OF CEREBELLUM.

Dr. J. F. Moran presented the following specimens with histories of the cases:

William B., aged 47; constitution good; married and father of children; occupation, merchant.

Antecedents: Father died of paralysis, aged 60 years; mother died of asthma, aged 68 years. Thirteen brothers and sisters; one died of typhoid fever, aged 8 years; ten died in infancy; one brother living, and he is tubercular.

Paternal Grandparents: Grandmother 92 at death; grandfather, age and cause of death unknown.

Maternal Grandparents: Grandfather died of cancer of the stomach; age unknown; grandmother, aged 60; cause of death unknown.

All family on paternal side long lived; mother's relatives died comparatively young, and most of them succumbed to tuberculosis.

Early History: From childhood suffered with headaches, which his parents attributed to over-study, and thought seriously of taking him from school. At the age of 17 he was struck on the head with a scrubbing brush, but did not experience any serious trouble. Of late years the headaches have recurred with great frequency, as often as twice a week, particularly since February, 1895. They are of stabbing character, and limited to the occipital region of the right side, the paroxysms lasting from twelve to twenty-four hours, and since August, 1895, accompanied with vomiting, immediately after cessation of the attack is able to eat, and does not suffer any gastric distress. Complains of vertigo in the recumbent, as well as sitting, and erect position, and on attempting to walk, staggers and reels toward the left side and sometimes falls forward. Difficulty of vision and complains of buzzing in ears. Specific history negative, no paralysis or convulsions, mental state excellent.

Ophthalmological examination by Dr. Wilmer showed myopic astigmatism, perfect sight with refraction error corrected, and no organic disease in the interior or exterior of the eyes. Otological examination by Dr. Richardson: Slight retraction of membrana tympani, catarrhal inflammation of middle ear cavity, hearing in both ears $\frac{30}{40}$, nerve conduction good.

I saw the patient for the first time January 1, 1896, and he was then in the throes of a paroxysm. His excruciating suffering and uncontrollable vomiting was pitiful in the extreme. During the paroxysm, as well as the intervals, his temperature remained normal and pulse regular and uniform, ranging from 70 to 80; right pupil larger than left, both respond to light; no nystagmus and no appearance of optic neuritis; urine normal. Nothing abnormal about sense of taste or smell, no deviation of tongue, no impairment of articulation or difficulty of swallowing, no tenderness on percussion nor was there any difference in percussion note of either side of skull observed. Staggering, uncertain gait, with reeling towards the left side, marked incoordination of the right hand. Patellar reflexes little if at all exaggerated, and no definite ankle clonus. No distinct abnormalities of sensation detected.

The paroxysmal headaches, projectile vomiting, vertigo, absence of fever, staggering gait associated with inclination to left side and sometimes to pitch forward, prompted a diagnosis of cerebellar neoplasm. Although the specific history was negative, a saturated solution of potassium iodide in milk was ordered in increasing doses up to forty grains four times a day, and continued for several weeks without the slightest benefit. While the patient's family history was markedly tubercular on maternal side, it was not deemed advisable to further continue medical measures, as it was known that for several months previous to my assuming charge he had received supportive treatment. An operation was therefore advised, hoping that it might at least give relief, if it did not afford a radical cure. Drs. Kerr and Osler were called in consultation. Both, after a thorough examination, confirmed the diagnosis and approved of surgical interference. Owing to the absence of localizing symptoms, it was impossible to tell the exact situation of the lesion. The inclination to the left side, occipital headaches and dilatation of right pupil, suggested its probable location in the right lobe.

The operation was performed at Providence Hospital by Dr. James Kerr, assisted by Dr. Edward M. Parker, in January, 1896. A tongue-shaped flap

with free border reaching the superior curved line of the skull was made in the right occipital region. The opening was made in the skull with the trephine and enlarged beyond the median line by means of chisel and mallet and rongeur forceps. There was no apparent bulging of the dura, and the membrane was normal. It was incised and reflected, which permitted excellent exposure for palpation and inspection. Exploration of the right lobe was made, but nothing abnormal detected. The left lobe was then explored with a groove director, and it likewise gave negative results. Although great care and gentleness were taken, the right lobe was considerably lacerated, and a considerable portion removed. The cavity was packed with iodoform gauze, the dura closed and the flap united with several interrupted sutures. The gauze packing and dressing were renewed daily for several weeks, then a rubber drainage tube was placed in the lower angle of the wound and allowed to remain until the discharge ceased.

Although the operation failed of removal or detection of the lesion, it was successful in relieving the distressing headaches and vomiting, and there was gradual improvement of the ataxia and incoordination, so that the patient was able to walk with the assistance of a cane. The disturbance of vision, tinnitus aurium and giddiness still remained, and immediately following the operation there was slight difficulty in articulation. His general health improved for nearly a year, when the headaches recurred, attended with nausea, gait became more and more unsteady, and finally he was unable to walk without assistance. The disturbance of vision, hearing and articution became more and more marked and the vertigo more pronounced. At the same time he experienced difficulty in swallowing, food often regurgitating through the nares; also complained of tingling in the lower extremities.

Examination of the head showed an elastic globular tumor protruding through the opening made in the skull at the previous operation. Pressure upon it aggravated the headaches and other symptoms.

I advised a second operation to relieve intercranial pressure and for purpose of further exploration, which was performed February 28, 1897, by Dr. Kerr, assisted by Dr. Parker. An incision was made through the skin union of the previous operation. The dura was greatly adherent to the overlying structures, and separated with some difficulty and attended with considerable hemorrhage, which was readily controlled. On opening the dura, there was an escape of cerebro-spinal fluid, and beneath the membrane was exposed a cyst bulging into the opening in the skull. Puncture of this gave exit to about two ounces of straw-colored fluid and a small amount of gelatinous looking matter. The cavity, which measured about two inches in depth, was thoroughly explored, but no growth found. It was thought perhaps this was the original cyst, but being of small size and deeply situated, escaped detection at the first operation, and, owing to the space left by the partial destruction of the lobe, it had enlarged and pushed forward to the surface. This view seemed plausible by the fact that there was a decided improvement in the symptoms immediately following the operation. The right pupil returned to its proper size; articulation was perfect; inco-ordination of the right hand remarkably improved, and patient became bright and cheerful, and manifested much interest in the result of the operation. The improvement, however, was only transitory, as on the following day the articulation was again indistinct and a slight ptosis of the left eyelid observed, together with frontal headaches and nausea; tongue heavily coated and breath very offensive; temperature 100°. From this time there was a gradual deterioration, as evidenced by increase of mental sluggishness, difficulty of swallowing, paroxysmal coughing, continued fever, temperature fluctuating from 99° to 103°. Sometimes higher in the morning than in the evening, and *vice versa*. On the seventeenth day the temperature dropped to 97.8°. On the eighteenth day it was normal, and then gradually rose to 102° on the twenty-first day, when the patient died.

Bacteriological examination of cultures taken from the wound showed presence of staphylococcus, but no streptococcus.

Autopsy performed by Dr. D. S. Lamb, three hours after death, as follows:

"Examination limited to the head. On the inner surface of the left middle fossa of the skull was a broad, flat blood clot of somewhat recent date. Dura adherent to right cerebellar hemisphere so firmly that the latter was torn in removal; about half of the hemisphere had been removed by operation. Isthmus of cerebellum partly destroyed, probably by same operation. Left hemisphere contained large cyst cavity with thin hemisphere wall; in the floor of the cavity was a tumor the size of an almond. In the absence of any other examination of the body cavities, the cause of death would appear to be the cerebellar lesion. I am inclined to think that the large cerebellar cyst is a consequence of the removal of the cerebellar tissue by operation, since such cysts do form sometimes after removal or destruction of the brain tissue."

The microscopical examination, kindly made by Dr. Walter Reed, shows the tumor to be a fibro sarcoma, and well supplied with blood vessels. The result of the autopsy clearly demonstrates that, even if the tumor had been discovered at the time of operation, owing to its deep situation and close proximity to the medulla, any attempt at removal would have been extremely hazardous.

The points worthy of remark about this case are:

1. Absence of distinct localizing symptoms.

2. The nature of growth and duration of the symptoms.

3. The decided improvement of locomotion and inco-ordination, although half of the right lobe was destroyed, and there was a chronic inflammatory condition of the middle lobe.

4. Explanation of the presence of the cyst of the left lobe, whether it existed at the time of the first operation or was formed subsequently, owing to the relief of pressure, or whether it is due to degeneration of tumor.

Though a microscopical examination was not made of the wall, its smooth and transparent structure would seem to contraindicate the latter. Williamson believes that the majority of cysts formed in the cerebellum are degenerated tumors, based upon examination of cysts which appeared to be simple; but careful microscopical examination showed in the wall a mass of new growth.

The presence of headache, causeless vomiting, optic neuritis, vertigo and ataxia, point, with a very great degree of certainty, to the existence of cerebellar lesion; yet it is impossible, unless there be cranial nerve palsies, to differentiate cortical from subcortical neoplasm, nor have we any sign of positive value as to character or extent of primary growth. The headache, particularly if associated with tenderness, is suggestive, but it is frequently frontal, and in this case was on the side opposite the lesion.

Optic neuritis is a very important sign, and is usually found in the majority of cases of cerebellar growth. Repeated examinations, however, showed its absence. Vertigo is also a valuable aid in forming a diagnosis, but it, too, is sometimes absent, and its presence in affections of other parts of the brain and internal ear disease must not be overlooked. Ataxia is the most characteristic symptom, and according to Nothnagel, is due to pressure upon or involvement of the vermis. Luciani denies this, but attributes the ataxia to irritation or destruction of the peduncles. Collins observes that lesion of the middle lobe is not attended by any special symptoms not found in involvement of other parts of the cerebellar lobes, while according to Sachs, inco-ordination is present in 80 per cent of tumors involving the middle lobe, and only in 49 per cent when the lateral lobes are affected. Finally, Bruns, from a study of four cases of his own and six of Oppenheim, Bernhardt and others, concludes that disturbance of equilibrium, identical with so-called cerebellar ataxia, occurs very frequently in tumors of the frontal lobes. Can the inclination be relied upon in determining in which lobe the tumor is located? An analysis of twenty cases by Starr, in which staggering to one side

was a prominent and constant symptom, shows that in sixteen cases the staggering was away from the side of lesion and four cases toward the side of lesion. Krauss has observed in thirty-five cases that the proportion is greatly in favor of reeling toward the diseased side. According to Luciani, if the patient staggers away from lesion, the condition has been one of irritation of the peduncles; while if the staggering is toward the lesion, it is due to destruction of the middle peduncles. It is impossible to determine during life, from the symptoms in any given case, whether there is irritation or destruction. Therefore, no positive conclusion can be reached. The cerebellum, like other organs of the body, is liable to invasion by morbid growth, the most frequent varieties being tubercular, gummata, sarcoma, glioma and cysts.

The treatment of intercranial tumors in general is divided into medicinal and operative. Gummata, particularly in its early stages, before the occurrence of pachymeningitis and degeneration by cutting off the blood supply, are amenable to mercury and iodides.

Horsley and others have observed from the same treatment temporary abatement of the symptoms in glioma and other morbid growths, but are unable to explain its action. Bruns, Gowers and Oppenheim report spontaneous cure of intercranial tumors, but the occurrence is so rare as to make it of little importance. Horsley and Bruns consider that six weeks is sufficient limit for internal treatment, unless there is marked improvement, while Starr would extend it to three months.

The operative treatment of tumors of the cerebellum thus far has not been very successful. The obscure knowledge of the physiology, want of means of determining the nature and extent of growths, the inaccessibility of the ventral surface, limit the field and make the operation of necessity an exploratory one. Starr has collected sixteen cases with operations. In nine cases the tumor was not found; in two cases it was found, but could not be removed; in three cases it was removed and the patients recovered; in two it was removed and the patients died.

Collins and Brewer have recently reported a case of partial removal of a subcortical tumor of the cerebellum, and the patient suddenly expired two and a half months later during a second operation for complete extirpation.

In spite of the few successful cases of removal of cerebellar growths, the excellent results of Horsley, Knapp and others, who have operated in a number of instances solely for the relief of pressure symptoms, demonstrate that it is possible to prolong life in comparative comfort, since it would appear that our chief hope for palliative or radical relief lies in surgical interference.

II. RUPTURED TUBAL PREGNANCY.

Mrs. Kate G——, from October 12, has been flowing for ten days. October 23, 1897, at 11 a. m., patient fainted. When patient was first seen, October 23, she was pulseless; hurried respiration (55); mental condition clear. She was very restless; complained of pain in abdomen and praecordial distress; given strych., 1-50, and morphia, ¼. Towards morning it was found necessary to give salt solution. Dr. Stone saw patient in consultation, confirmed diagnosis of extra uterine foetation. Owing to her nearly exsanguinated condition and weak heart action, it was deemed advisable to stimulate patient and give salt solution with view of putting patient in better condition for operative interference.

October 24. Patient very weak when put on the operating table. Left tube and ovary ligated and removed; fœtus came out at the beginning of flushing out of blood. A great quantity of free blood and clots removed. Inserted glass drainage tube and closed wound. Transfusion after operation on table into vein, hypodermoclysis into breast of Na. Cl. solution; patient put to bed. She reacted nicely, extremities became warm, was fully conscious and very bright. Her mental condition was excellent until fifteen minutes before death. Pulse, though rapid, had increased in volume and was much better than before operation. Patient passed sufficient urine. On evening of October 24 she became restless, pulse weaker, and she gradually sank, dying October 25.

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Original Articles.

SOME RESULTS IN THE TREATMENT OF TUBERCULOSIS WITH ANTITUBERCULOSIS SERUM.

BY E. A. DE SCHWEINITZ, Ph. D., M. D.,
Director Biochemic Laboratory, B.A.I.,
Agricultural Department.

Though we occasionally find in the literature reports of cases treated with tuberculin as originally prepared by Koch, and in many instances improvement has been recorded, its use as a therapeutic agent has, except in special cases, been discarded. Its value on the other hand for the early diagnosis of tuberculosis in animals has become general, and in some States, as Pennsylvania, the law now requires that all animals that are to be used for dairy purposes shall pass the tuberculin test.

Following the careful methods proposed by Dr. Trudeau, tuberculin offers also a means of positive diagnosis of uncertain cases of tuberculosis in man, and of indicating if the disease after treatment has been arrested or cured.

When tuberculin failed to give satisfactory results as a curative agent, attention was quickly directed to the preparation of a serum on the same principle as the diphtheria antitoxic serum. Maragliano, Babes, Behring and others prepared such a material for the treatment of tuberculosis by injecting horses with tuberculin alone, or a combination of tuberculin and virulent tubercle cultures. After long continued injections of the animals, the serum obtained was claimed to have antitoxic properties, and when this serum was injected subcutaneously into tuberculous animals together with a dose of tuberculin, the fatal effects or characteristic rise of temperature from the latter were counteracted. The strength of the serum was based upon the quantity necessary to prevent a tuberculin reaction. This method, however, did not fulfill all the conditions. In the first place as tuberculin is prepared from the cultures of the germ it is submitted to such a temperature that some of the products of the germ life are changed or decomposed, and hence, tuberculin as used does not represent the poisons of the tubercle germ as they are actually found in the animals suffering from this disease. Consequently a serum which counteracts the fever-producing properties of tuberculin, does not necessarily exert a beneficial influence upon all the phases of the disease in man.

Assuming that while it may not be

possible to establish a perfect artificial immunity to tuberculosis in man, but that the disease may be checked by reinforcing the natural resistance which is always present, we have endeavored to secure in a slightly different way from the one above described a serum useful for treating tuberculosis. In the first place, as reported to the Medical Society some time ago, we had found if an originally virulent tubercle bacillus was cultivated for many generations upon artificial media, that, while it did not lose the property of producing active poisons when so cultivated, it did lose the property of producing tuberculosis in animals when the latter were injected. Furthermore, the animals, as guinea pigs, after a time possessed a very marked resistance to tuberculosis, when they were subjected to an inoculation with virulent tubercle bacilli, that would cause disease and kill the checks in a month to six weeks.

This attenuated germ seemed to offer suitable means for treating animals for the production of a serum with active properties, and was used in large quantities upon both cows and horses. The entire culture medium, including the germs, was at first used for these injections. As the toxins of the tuberculosis germ are, however, found to a large extent within the cell wall, it seemed desirable to bring these into solution as far as possible and inject the animals with the extract. At the same time it should be advantageous to discard the excess of nitrogenous bases, glycerine and pepton present in the culture media and unused by the germ. To accomplish this solution, I have used an ordinary milk shake machine. The live germs in quantity are transferred to the sterilized tumblers, and the liquid added which it is desired to use as a solvent. The whole is agitated as rapidly as possible until the cell contents have been pretty well extracted. The residual germs can then be separated and submitted to the same process. This germ extract, as it may be called, containing the soluble products of the cells is then used for injection. As the germs have not been submitted to a temperature above that at which they have been grown, this solution should contain the unchanged products of the cell life. This material is fairly well absorbed by the animals. The serum obtained from cows treated with a large amount of cultures had apparently little or no value in checking tuberculosis in experimental animals. The serum obtained from injected horses was at first without any apparent influence, but as their treatment progressed, and more and more germ extract was injected, the serum gradually acquired properties of value. When given to tuberculous guinea pigs together with tuberculin the serum would usually retard or prevent the characteristic reaction, and in addition prolonged their lives for a number of months. These results seemed to warrant the use of the serum upon man. Through the courtesy of Dr. J. E. Stubbert, in charge of the Loomis Sanitarium at Liberty, New York, I have been able to have a number of patients treated with this serum. Dr. Trudeau, of Saranac Lake, has treated a few cases from time to time, and Dr. C. W. Richardson and Dr. Street, and recently Dr. Ball, of this city, have used it in small quantities. The effect upon patients having night sweats and high temperature seemed to be in general to reduce the temperature and cause the night sweats to cease. There has also been noticed in some cases after using the serum a tonic influence, with increase of the patient's weight, diminution of expectoration, and, in some instances, apparent cure. To show the effect upon lowering of temper-

ature, if this was really due to the action of the serum, the following cases may be noted:

A young man of about twenty, in good condition, with consolidation at the apices of both lungs, evening temperature about 100 Fahr., was given injections of the serum beginning with five minims, increasing to 1.8 c. c. every other day for 12 weeks. After the first week there was a gradual fall in temperature until the morning temperature was about 97.5 and the evening between 98.5 and 99 degrees Fahr. During this time the patient improved greatly in physical condition, but was, from time to time, affected with catarrhal gastritis. The number of tubercle bacilli in the sputum decreased, and the consolidation partly disappeared.

Another case, a young man of the same age with consolidation of the left lung, moderate cough, numerous bacilli in the sputum, high evening temperature, 102 Fahr., and generally poor condition, received injections of the serum for three months. Within three weeks after the first injection the temperature had been reduced to normal, he had gained materially in weight (11 lbs.), the number of bacilli in the sputum had decreased, and the physical signs greatly improved. The cases I have referred to are from the sanitarium, and the following table has been given to me by Dr. Stubbert:

PATIENTS TREATED WITH SERUM FROM BIOCHEMIC LABORATORY, AGRICULTURAL DEPARTMENT, IN CONNECTION WITH GENERAL HYGIENIC AND CLIMATIC TREATMENT ONLY.

Number of Patients Treated, 34.

Incipient stage	16
Moderately advanced	15
Far advanced	3
	34

Physical Signs.

Improved	30
Unimproved	4
	34

Expectoration.

Decreased	28
Stationary	6
	34

Temperature.

Decreased	21
Unchanged	13
	34

Cough.

Decreased	26
Stationary	8
	34

Appetite.

Improved	27
Unchanged	7
	34

Tubercle Bacilli.

Disappeared	4
Decreased	7
Stationary	20
Had none	3
	34

Weight.

Increased	25
Stationary	7
Lost	2
	34

These cases, compared with those treated in other ways or under climatic influence only, showed that the improvement with the use of serum was more marked.

In several other cases where the disease was more advanced and almost beyond any treatment, the temperature was but slightly affected. The individuals, however, desired the use of the serum continued, as they claimed it had

a bracing effect which they could not secure in any other way. In making a general review of 45 cases treated with this serum at Liberty, we may say that 33 per cent were greatly benefited and improved by its use. The remainder showed neither good effects nor bad results. In general, the injection of the serum causes no local disturbances. Occasionally a slight rise of temperature may be noted, or a local irritation or abscess formation at the point of injection. These arise probably from some abnormal condition of the patients or infection during injection, and are not due *directly to the serum.*

The experimental work on guinea pigs and the results on man show that there is contained in the serum from horses treated as above indicated, a substance possessing some value. That this particular substance has not been obtained in its strongest form is also apparent. Some attempts have been made to isolate this active principle, and by a long method of precipitation, solution, reprecipitation and so forth, a small amount of a white powder allied to the soluble ferments as trypsin, etc., has been obtained. This substance appears to exert the same action as the serum from which it is derived.

Granted that a curative substance can be produced in the serum of treated horses, so far obtained, however, in very small amounts, the question naturally arises as to its character, as well as the character of the active principle present in all antitoxic serums.

A review of the work in general seems to warrant the theory that the value of so-called antitoxic serums lies in the fact that they contain in solution one or more soluble ferments which are able to digest and destroy in the animal body the toxic products that the germ forms. These ferments are probably secreted by the leucocytes or other cells acting under the stimulation of the toxins first elaborated by the germ of the disease. In the case of a germ like diphtheria, probably the secretions of only one ferment will be stimulated, while in the case of tuberculosis where a larger number of toxic substances are produced, it is probable that several ferments are needed to counteract their effect.

These ideas seem to be supported by the properties of antivenomous serums described by Calmette and Fraser. They have found that the serum from an animal artificially immunised to the cobra will counteract the poison of venomous snakes in general. The poisons of snakes seem to belong to the class of true toxic proteids, differing principally in the quantity in the different species. I believe, therefore, that a soluble ferment which would destroy the venom of one snake would have the same effect on all. The isolation by Fraser from the bile of serpents and in very much smaller amounts, from the bile of the ox, of a principle which possesses antivenomous properties, is in accord with the theory of soluble ferments, although Fraser himself believes in a more direct chemical neutralization. I do not mean to imply that a distinct separate ferment is produced for the toxins of each germ, but simply that certain ferments can be secreted by the leucocytes or other cells under certain conditions. Some germs require but one of these ferments for the digestion of their particular product. The toxins of another germ require a second ferment; the toxins of a third germ require both; while all these ferments are needed to destroy a large variety of toxins which a fourth germ produces. This probably accounts for the difficulty in treating tuberculosis. This bacillus produces at least three classes of poisons, a necrotic acid, a fever-producing substance, and on

that acts as a direct poison. These are apparently more stable than the toxins produced by some other germs, and hence more difficultly and more slowly attacked by the soluble ferments. Just as different ferments digest the different classes of foods, so are two or more of these special ferments necessary for the destruction of the different germ poisons.

The application of Koch's tuberculin known as T. R., prepared by extracting finely ground virulent bacilli, has not in general, judging from the reports of many cases, given the hoped-for satisfaction. As noted by Trudeau and Baldwin and others, the material may contain live tubercle bacilli which are capable of producing disease, and as I am informed that the firm at Höchst has discontinued the manufacture, there is good reason to believe that some unlooked-for difficulties have been encountered by the originators of this treatment.

Another method of treating tuberculosis has recently attracted attention, viz: the use of so-called oxytuberculin and oxytoxins in general. The first work in this direction was done by passing an electric current through the solutions of the toxins of the different germs. As this action always took place in the presence of salt, some hypochlorite was first formed, and this in turn partly destroyed the toxins. In reality, therefore, when this electrolysed material was injected into animals a weak toxin was really used, and it is well known that immunity can be produced by repeated small doses of toxins. The so-called oxytuberculin is said to be prepared by digesting tuberculin (which contains salt, 4 to 7 per cent glycerine, pepton, nitrogenous bases from the meat, and a small amount of the fever-producing principle which the germ forms) with hydrogen peroxide at 100 degrees C. for several days. Sodium hydrate is then added to the solution, the precipitate formed filtered off and the filtrate neutralized with boric acid. This mixture is the product called oxytuberculin. Submitted to an analysis it was found to contain 6 per cent solid matter, about 65 per cent of which or 4 per cent of the whole was mineral salts, chiefly sodium phosphate and borate. In addition some sodium glycerate was present. I am unable to speak as to its remedial properties, except that it has not appeared in my hands to cure tuberculosis in guinea pigs, and I fail to understand why a mixture of this sort, largely a solution of sodium salts, should be called a specific.

Whether further application of the serum treatment in its present form will continue to prove beneficial, and give better results, or whether this must be materially modified, we cannot say. The results obtained certainly show that the efforts are properly directed.

Though many individuals hold that on account of the slight evidence which can be found in the clinical history of tuberculosis, there is little to lead us to believe that immunity ever occurs in the natural course of this disease, the experiments of Dr. Trudeau, and also of the writer, certainly show that artificial immunity is possible. In reporting the general results of some of his work, Dr. Trudeau says: "102 pigs were used, 36 of which were checks, and 66 were vaccinated with attenuated tubercle bacilli. All were then inoculated with a virulent germ. The average life of the controls was 50½ days, and of the vaccinated animals 154.3 days. The latter lived nearly three times as long as the controls." In some cases they lived 18 months or longer. If the lives of experimental animals can be protected for six months to two years, and even longer, it is fair to assume that similar methods

of treatment should give very much better results in man.

When the study of serum therapeutics and the treatment of diseases of bacterial origin are freed from a commercial aspect, still better results can be expected. It is just as necessary in this work that chemical principles should be considered, as the fact that there is a specific germ that causes tuberculosis.

Perhaps it may be possible to prepare antitoxins by artificial means outside of the animal body, but it seems, from present results at least, that the active live cell and the intervention of the laboratory of the animal body are necessary adjuncts in the production of these curative substances.

SERUM TREATMENT OF TUBERCULOSIS.

By C. W. Richardson, M. D.,
Washington, D. C.

Ever since the great White Scourge has exerted its devastating influence on mankind, the medical profession of the world has been watching, experimenting, investigating, and hoping for the discovery of some panacea to arrest its onward progress and stay its withering hand. The horror, distress, suffering and heart pain wrought by it touches every household among kindred or dear friends. The medical man feels its constant touch whatever the field he works in; and full well measures the hopelessness of most all therapeutic resources. Should it surprise us then that the whole medical world which has been watching, for years, the horizon of hope, seeing one hope after another destroyed, should still look with longing eyes and grasp, only too eagerly, every new agent which appears above the medical horizon?

In a short medical career we have seen a number of these agents advanced, which seemed destined, during a short period of experimentation, to be about to fulfill the necessary requisites; to-day they are not in the hands of the practical therapeutist. It is hardly necessary to mention these agents. The more prominent the investigator or experimenter, the greater the following.

Since the discovery and establishment of the serum therapeusis, and the marked success attained through the administration of the antitoxine of diphtheria for the alleviation of diphtheria, the profession has hoped, and still hopes, that through the work of the experimental bacteriologist great results shall ensue from work in this field for the relief of various forms of tuberculosis.

When the antituberculin serum was first placed upon the market, I had the pleasure of examining a case of laryngeal tuberculosis for Dr. Dillenback. In this case there was infiltration of the false chord and ulceration of the true chord on the left side with the usual physical signs of pulmonary tuberculosis. Dr. Dillenback placed the patient upon Paquin's serum, and after several months of the treatment I saw the patient again, and was greatly surprised to note the complete subsidence of the laryngeal conditions above mentioned, with marked improvement in the pulmonary evidence of tuberculosis. Noting this seemingly marvelous improvement, I felt as though I were in duty bound to give the serum an extended trial. I immediately placed three patients upon the serum. It would make my notes too long to give a full description of these three cases. *One case* was that of a young woman who had been under my care for four years, and who had shown continuous improvement throughout this whole period. An extensive interarytenoid ulceration had

healed before the serum was administered. Extensive disease in the left lung. Mixed infection. The serum was made use of for eight months, during which time the improvement was continuous. During the early part of the treatment Paquin's serum was used; latterly, De Schweinitz' serum. In February, 1897, which had been usually the period of the year when she began to show unfavorable signs, she developed a couple of abscesses, which caused so much pain and suffering as to cause me to desist in the further use of the serum. Patient is doing nearly as well this winter with no serum.

The *second case* was that of a young man with an extensive bilateral pulmonary infection. Mixed infection. The serum was used for three months—Paquin's. As his condition showed no improvement, he was then sent to Asheville, where he subsequently died from an acute pericarditis.

The *third case* was also of laryngeal and pulmonary tuberculosis. This case did well and improved under the treatment during a period of six months, although the laryngeal ulceration did not fully heal. At the end of this time she was sent away for the summer, and on her return, which was hastened on account of increase of laryngeal pain, found her general condition much improved, although the laryngeal ulceration had extended. Had used serum while away. Serum discontinued at patient's request. A short treatment brought the laryngeal ulceration in almost a perfect state of cicatrization. Patient then sent to Asheville, whence, after a short sojourn, she returned home apparently well. Since November, a few weeks after her return from Asheville, she has been rapidly growing worse —laryngeal and pulmonary symptoms intensifying. Now in Asheville. Serum discontinued last June, after six months continuous treatment, during which improvement in general and pulmonary condition was moderate. Improvement was decidedly more rapid and positive in Asheville.

A *fourth case* in which the serum had an extensive trial was that of a woman of fifty years of age. She had, only within a short period, lost her only son of acute tuberculosis. I saw her after quite a severe pulmonary hemorrhage. There was quite an area of the right lung infected, extending down to third rib. These hemorrhages continued for over a week and were quite copious. Bacilli present in sputa. Patient kept under treatment for a period of six months, wholly with the use of the De Schweinitz serum. No bacilli discoverable in last examination of sputa. Physical symptoms improved. I do not consider patient well, although greatly improved.

Mention could be made of many other cases less continuously and more imperfectly tested with the agent, but they prove nothing for or against the remedy. I shall not bring them within the scope of this report. These cases are few in number, and as one wishes to look at them they may be adjudged as favorable results from the use of the serum or as neutral in result.

The great difficulties that beset one in coming to a conclusion with regard to the value of an agent in the treatment of tuberculosis, are well known to every one who has much experience in the disease. The serum treatment of individual cases will have to be carried over a period of years, in which no relapse has occurred, before its value can be unassailed, and a collection of such cases must be made before its general application for the alleviation of this disease can be settled.

In this connection, I would like to add

the histories of two of my patients, the one receiving and the other not receiving serum. These cases came under my observation within one week of each other.

Case one is a single man, a medical student, about twenty-three years of age, without care. *Case two* is a married man, with business cares, about thirty-five years of age. Physical signs exactly the same, except in one case the disease is localized on the right side, and in the other, on the left side. Both patients were sent to the Adirondacks in June of last year, and located within fifteen miles of each other.

Patient No. 1 received De Schweinitz treatment during the whole period of his sojourn. *Patient No. 2* received no serum. *Patient No. 2* returned to Washington in October with a letter to me from Dr. Trudeau, stating that the patient was well. My examination was confirmatory. Gained thirty-four pounds. Last examination, made two weeks ago, demonstrated condition still good. During all the period the patient has been taking care of a very large and exacting business. *Patient No. 1* returned to Washington in December, and while showing almost as great improvement in many particulars as *patient No. 2*, yet shows, on physical examination, evidences of disease in right lung. Has returned to the mountains.

In the use of these agents, especially in the experimental stage, I think it would be much wiser to confine our work to only those patients whom we can keep under that careful surveillance which can be attained only by placing them in hospitals, or limiting our work solely to those cases that we find within the wards of hospitals. This, of course, deprives us of some of the best experimental material, but we must recognize the fact that our private patients form, at best, but poor material for experimentation.

We must not forget, in the application of any agent for the cure of tuberculosis, that many of the cases to which it is applied are markedly chronic; that apparently hopeless cases, under all or any lines of treatment, occasionally improve and get well, and that many cases show a marked fluctuation in improvement or retrogression from time to time in the course of the life of the cases. All these facts make us hesitate and cautious in accepting the results so far claimed as being due solely to the action of this agent alone. The serum certainly has shown results which warrant us in continuing practical experimentation along this line, and in having hopes that it, or some other agent, will prove to be the remedy that will save the lives of countless thousands.

A HÆMATOZOÖN IN THE DOG.

By D. S. Lamb, M. D.,
Washington, D. C.

A veterinary surgeon in New Orleans some time since sent to Dr. C. B. Robinson, V. S., of this city, a dog's heart, in the right cavities of which were several thread worms of the species *Filaria immitis*. Dr. Robinson presented the specimen to the Army Medical Museum. The sender wrote that the parasite was quite common in the dogs of New Orleans.

The name Filaria immitis was given by the eminent anatomist and parasitologist, Prof. Joseph Leidy, of Philadelphia. The parasite is well figured in Neumann's *Parasites of Domesticated Animals* (Fleming's translation, London, 1892, p. 640), from which work the following statements are largely taken. The male parasite is 12 to 18 cm. long, the female 25 to 30; diameter about one mm.; the body white, anterior end more

obtuse than posterior, mouth surrounded by six small papillæ. The parasite is found in Europe, Asia and North and South America; it is said that almost every dog which is examined, *post mortem*, in China shows the parasite. Found preferably in countries which abound in marshes and surface water. Curiously the embryos seem to leave the peripheral circulation during the day and accumulate in the thoracic and abdominal vessels, reappearing at night.

This filaria kills nearly all the European dogs which are taken to China. Death may be preceded by convulsions and dyspnœa. Sometimes for several days the animal is dull and weak, becomes dropsical and finally has convulsions. Some have insatiable hunger and thirst and emaciate extremely before death. Hæmatamesis has been noticed. Leidy states that some dogs have a cough.

It is supposed that the filaria enters the dog through the drinking water. The embryos are found in fœtal dogs, showing the hereditary transmission. They are also found dead in the intestines of fleas and lice which infest the dog, sucking its blood.

In dogs which die of filariosis the parasites are found in both cavities of the right heart and the pulmonary artery and its branches; sometimes only a few, at others hundreds; if numerous, they are inextricably intertwined together, and with the fleshy columns of the heart, obstructing the flow of blood; they cause hypertrophy, endocarditis and endarteritis; sometimes they are found in the systemic circulation; have been found in the subcutaneous and intermuscular connective tissue; sometimes in subpleural tumors and in splenic tumors; sometimes hemorrhage occurs from the kidneys or bladder, and sometimes the parasite seems to cause chronic nephritis, explained by the irritation of elimination of the embryos, as chyluria and hematuria occur in man from the filaria sanguinis hominis. Embolism and thrombosis of the lungs occur.

The dog is more affected by hæmatozoa than any other domesticated animal.

CASE OF DIFFUSE SYMMETRICAL SCLERODERMA, WITH MARKED MUSCULAR ATROPHY.

By James C. McGuire, M. D.,
Professor of Dermatology, Georgetown University.

B. K., seventeen years of age, a well-developed, intelligent mulatto girl; father died some years ago of pneumonia; mother is a strong, robust woman, who has seldom had a day's sickness. The patient states that some years ago, while attending school, she began to suffer from rheumatic pains, loss of appetite and general debility, though she had been strong and well developed for her age, and as capable of doing as much work as her mother. She now had to leave school, remain at home, and was "absolutely good for nothing." In a short time the joints began to swell and became so stiff she could not extend the arms or fingers. At first the swelling was soft and pitted on pressure, but it soon extended along the arms, forearms and thighs, and became hard and unyielding. Two years ago she first noticed the limbs were shrunken in size and as hard and unyielding as stiff leather. She entered a hospital and was then treated for progressive muscular atrophy; receiving no benefit, she came to this city a year ago. The 1st of October she presented herself at my office for treatment. Dark pigmentations, irregular in outline, from a pin-

head to the palm of the hand in size, were scattered over the surface of the skin, the size of the arms reduced very much in circumference, the muscles so much atrophied that the skin seemed to be almost in contact with the periosteum, with the exception of longitudinal ridges of muscles that extended the full length of the arm, and are as hard as wood. The arms cannot be lifted above the shoulders, nor can the fingers be fully extended; the thighs also are much reduced in size; on the inner portion of the left thigh just below the groin is a distinct swelling about the size of an egg. The ankles are much swollen from pressure, causing some pain. About the right buttock is a subcutaneous tumor, the size and shape of a small saucer, and though the skin is firmly attached to it, the tumor is freely movable on the parts beneath. The integument of the arms, thighs and legs feels cold and hard to the touch; sensation is unimpaired; two small ulcerations are seen on the right elbow. The face is much swollen, the eyelids œdematous, covered with a reddish papular rash. Though red and looking like a papular eczema, the condition has lasted without change for two years. There is no pruritus and no history of moisture. The skin in this situation is not bound down, but feels rough, dry and unyielding. The integument about the lower jaw is hard and smooth; cannot be pinched up into folds. With the exception of general weakness, the patient does not complain. From a clinical standpoint the case is of interest on account of the excessive muscular atrophy, the very large and peculiar shaped subcutaneous tumors and the non-inflammatory eruption. When first seen the patient was given a generous diet with cod liver oil and iron; locally salicylic acid ointment, massage, combined with inunctions of cod liver oil and an occasional Turkish bath. The galvanic current applied twice a week over the regions of the spine. At the present time the patient declares she is feeling better in every way, except for periodical pains extending along the limbs. The skin lesions have changed but little in appearance.

The Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

The Glandular Fever of Childhood.

The author records a case of this affection which he regards as fairly typical of the disease as described by Dr. Dawson Williams (*Lancet, January 16, 1897*), and yet exhibits a few differences that make it worth reporting. The district in which the patient lived was passing through an epidemic of "milk infection," the sufferers presenting evidences of systemic poisoning, with purging, vomiting and high temperature. In several cases there were well marked swollen glands in the neck, due, as the author believes, to absorption of poison from the intestine. The diarrhœa carries off the poison, and the withholding of milk prevents any fresh infection. The patient, whose history is given by the author, was a healthy child of three years. The attack began suddenly, the child awakening from sleep screaming and delirious, and this was followed by vomiting, abdominal tenderness and high fever. There was no sore throat nor redness of the pharynx. A small swollen gland was discovered along the border of the left sterno-cleido-mastoid. In a few days the head became fixed by a row of hard glands on each side of the neck. Then followed an attack of hæmaturia, and next day, after the passage

of two or three watery stools, the temperature fell to normal. The glandular swelling slowly subsided, and the child made a perfect though tardy recovery.—Jackson (G. S.). The glandular fever of childhood. Lancet, Lond., 1897, ii, 979.

The Bacteriological Diagnosis of Diphtheria and the Difficulties Arising from the Presence of Pseudo-Diphtheritic Bacilli.

The author says that it is generally conceded that bacteriological examination is of great value in diphtheria. The disease, as a matter of fact, varies extremely, and is frequently so ill defined that it is difficult to arrive at a diagnosis by any other method ; hence the risk of serious mistakes.

It must, however, be admitted that bacteriological examination as performed nowadays is far from leading to results of absolute certainty. The essential defect of the present method lies in the fact, he thinks, that we are not as yet in possession of any criterion enabling us to sharply differentiate the bacillus of diphtheria from the group of so-called *pseudo-diphtheritic bacilli*, the latter being but slightly or not at all virulent to the guinea-pig. These pseudo-diphtheritic bacilli in the majority of cases absorb coloring reagents more actively, develop more abundantly on agar-agar, continue to grow at a temperature of from 20° to 22° C., and leave the broth alkaline, whereas Löffler's virulent bacillus rapidly imparts to it an acid reaction. Certain non-virulent bacilli, however, exist, which resemble the diphtheria bacillus, so closely that inoculation on animals can alone clear up the diagnosis.

The separatist school holds that no one has succeeded in imparting virulent properties to a bacillus in which they originally did not exist ; they also assert that it is possible, in the majority of cases at any rate, and with sufficiently minute search, to detect positive differences between diphtheritic and pseudo-diphtheritic bacilli. The opponents of these views declare that it has been found possible experimentally to transform a virulent into a non-virulent bacillus, or to render virulent one which originally possessed but slight activity, and that the appearance of the cultures is not at all sufficient to constitute distinct species, inasmuch as it may vary in the same bacillus.

De Martini asserts that the virulent diphtheritic bacillus proliferates luxuriantly in non-immunized horse serum, but that it refuses to sprout in antidiphtheritic serum. But Spronck contends that this is a mistake. Certain samples, indeed, behave in this manner, but others again of equal virulence grow quite as well on antidiphtheritic serum as on non-immunized horse serum. Further on, the author says that to assert the existence of diphtheria from the mere fact that a large number of colonies have developed after cultivation on serum, and because these colonies are composed of bacilli, exactly resembling those of diphtheria, is to expose oneself deliberately to mistakes The bacteriological diagnosis can only give absolute certainty after inoculation of the culture into an animal ; when the bacillus, in a dose of 2 cubic centimeters, only gives rise to more or less extensive œdema, it is necessary to proceed to the test of previous vaccination with antidiphtheritic serum.

A dose of from ½ to 1 cubic centimeter of antidiphtheritic serum, active in the proportion of 1 to 100,000, is injected preventatively under the skin of the inner aspect of the thigh in a guinea-pig weighing about 300 grammes. Six hours later this immunized guinea-pig and a test animal of the same weight receive 2 cubic centimeters of the culture under the previously shaven and disinfected skin of the abdomen. Eighteen hours later the diagnosis can be given after simple inspection of the seat of inoculation.

When bacillus dealt with is pseudo-diphtheritic, œdema will be found in both animals ; frequently, indeed, the œdema will be more marked in the immunized animal, a previous injection of a strong dose of serum apparently favoring serous exudation. When, on the other hand, the bacillus is Löffler's bacillus attenuated, the test animal will be found œdematous, the immunized not.

We can no longer accept the hypothe-

sis, says the author, that the bacilli of the throat and of the conjunctiva, which resemble the diphtheria bacillus, while being but slightly or not at all virulent, are able to develop virulence and give rise to diphtheria. The disease is always produced by a virulent micro-organism derived from another equally virulent one. Although the virulence of microbes is not a fixed element, yet this is no proof that the non-virulent bacilli of the throat and of the conjunctiva are diphtheritic bacilli which have simply lost their virulence, but are capable of recovering it. In his opinion, pseudo-diphtheritic bacilli, incapable of developing into the true diphtheritic variety, find in the mouth and on the conjunctiva a favorable medium for this development, whereas the true diphtheritic bacilli can only survive in these media when they already possess a certain degree of virulence, readily succumbing when this virulence is absent.

These facts lead to the following conclusions:

1. Naked-eye and microscopical examination of colonies developed on serum does not enable us to diagnose diphtheria with absolute certainty.

2. Inoculation of the microbe into an animal is indispensable in all cases, except in very severe ones or in times of an epidemic.

3. When a subcutaneous injection of 2 cubic centimeters of a fresh culture in broth does not kill a guinea-pig of 300 grammes in weight, but merely gives rise to more or less considerable œdema, the bacillus is, in the great majority of cases, pseudo-diphtheritic, having nothing to do with diphtheria. The test by previous vaccination with antidiphtheritic serum will leave no doubt on this point.

4. Diphtheria does not originate with the harmless, common-place bacilli which are met with in the mouth of many people. These saprophytic germs belong to several species of bacilli which are entirely different from the virulent bacillus of L ffler.

We can now understand the mildness of so many cases of sore throat and of abortive croup, which are put down as diphtheritic by many bacteriologists. We need no longer then apply serum therapy in cases in which it cannot possibly exert any influence. When we have done away with the notion that diphtheria may arise from common bacilli of the mouth, we shall be in a better position to search for and to find the external source of the infection, and be better able to prevent propagation of the virus. Spronck (C. H.). The bacteriological diagnosis of diphtheria and the difficulties arising from the presence of pseudo-diphtheritic bacilli. Med. Week, Par., 1897, v, 469.

Floating Kidney in Reference to Obstetrics and Gynecology.

Keller says that, on account of its intimate connection with the functions and diseases of the female genitalia, floating kidney in women demands our attention, both from the standpoint of prophylaxis and of differential diagnosis. In other words, how can the obstetrician and gynecologist prevent and recognize this condition? The author does not believe there is such a thing as congenital floating kidney, since, during the past thirty years, it has never been found in autopsies upon the new born. It is not until between twenty and forty years of age that troubles, such as pains, etc., referable to this condition, appear, while it is especially during childhood that blows, falls and other accidents occur which are supposed to play an active part in the production of movable kidney. There is, however, in all probability a congenital predisposition to this infirmity—a lack of strength in the renal supports, particularly in the vessels. For the later development of floating kidney, the supposed causative factors operate partly from without the body (trauma, tight-lacing, severe bodily labor) and partly from within the organism. The latter may be dependent upon pathological changes, or their results, such as dyspnœa, coughing, vomiting, straining at stool, etc. In each case many factors have, very probably, been operative, and their relative etiological value may be ascertained by having regard to their mode of action upon the various tissues (anatomical) or forces (physical) which serve to keep the kid-

ney in its proper place. Aside from anatomical support, displacement of this organ is limited by the resistance of its surroundings—intra-abdominal pressure. All causes which go to lessen intra-abdominal pressure favor dislocation of the kidney; and if we are able to prevent alterations in intra-abdominal pressure, we can limit the effects of causes which directly we cannot influence. The most usual, most pronounced and most swiftly acting cause of diminution of intra-abdominal pressure is the sudden emptying of the uterus during labor, and the lack of contracting power in the overstretched and inelastic abdominal walls. To restore this elasticity and give proper support to the contained viscera is one important method of prophylaxis or prevention of kidney dislocation. The binder and rest in bed are the best means to achieve this end. Since the restoration of the overstretched parts requires time, prolonged rest in bed is advisable; and Keller suggests that the parturient woman should not sit up until the middle, and should not stand up until the end of the third week. The patient, for obvious reasons, should preferably lie on the back, and must not sit up to pass water. Great care must be taken to see that the rectum and bladder are properly emptied. The binder is best worn for at least six weeks. Similar to labor in the method of inducing dislocation of the kidney is the removal of large tumors, and diminution of abdominal pressure may also be brought about by the rapid absorption of fat from the abdominal walls, mesentery and from under the peritoneum. Certain pathological conditions of the genitalia likewise favor the production of kidney displacement. The similarity of the clinical picture in floating kidney to that usually observed in diseases of the genital system is marked. The relation of the amount of suffering to the amount of displacement varies a great deal, but the connection is shown by the relief obtained in the horizontal position and after operative fixation. The author does not regard any subjective symptom as pathognomonic, and relies for positive diagnosis solely upon the results of bimanual palpation performed without narcosis. Keller concludes his paper with remarks upon differential diagnosis and treatment, and introduces the histories of illustrative cases. Keller (C). Die Wanderniere der Frauen, insbesondere die Wichtigkeit ihrer Berücksichtigung für den Geburtshelfer und Gynäkologen. Monatschr. f. Geburtsh. u. Gynäkol., Berl., 1897, vii, 29.

A Comparison of 300 Cases of Diphtheria Treated Without and 300 Treated with Antitoxin.

It is argued that a comparison of the results of cases of diphtheria, with and without serum, is often valueless because the cases are not treated in the same place by the same man, and are not numerically the same.

Six hundred cases which Clubbe reports were treated in the same hospital and under his own care. They had exactly the same food and stimulants, drugs and local applications. All were examined bacteriologically and the cases in which the Klebs-Loeffler bacillus was not found, are not included in his report. The only difference in treatment was that the last 300 were injected with antidiphtheritic serum.

Last 300 treated without serum.

	Cases.	Cured.	Died.	Death rate.
Tracheotomies....	199	64	135	67.8
Simple Diphtheria.	101	78	23	22.7
Total.....	300	142	158	52.7

First 300 cases treated with serum.

	Cases.	Cured.	Died.	Death rate.
Tracheotomies.....	129	80	49	37.9
Simple Diphtheria..	171	160	11	6.4
Total.....	300	240	60	20.0

The second table shows a dimunition in total death rate by 30 per cent, so that 96 lives may be said to have been saved in the 300 cases. There were 70 fewer tracheotomies in the last series, so that the serum treatment lessened the necessity for operation in 23 per cent of cases. Besides, the death rate in the tracheotomy cases is decreased 30 per cent. The ages of the patients (as shown by another table) were practically the same in the two series. By statistics, the author further shows that the earlier the antitoxin is given the better the results obtained. It is of value, however, even when given late. The death rate

among those to whom serum was given on the first day was nil; on the 9th day 33.3. A good antitoxin given at almost any period of the disease will lessen the mortality. In 20 per cent of laryngeal cases, even when there was dyspnœa, it lessened the necessity of tracheotomy. No ill effects were noted in any of the cases, even after the injection of very large amounts of serum. Since the above report was written, 100 additional cases (the fourth hundred) have been treated in the same hospital with antitoxin, with 19 deaths and 81 recoveries.

Clubbe (C. P. B.). Diphtheria treated with serum; the first 300 cases of diphtheria treated with serum, compared with the last 300 cases treated without it, at the Diphtheria Branch of the Sidney Children's Hospital. Brit. M. J., Lond., 1897, ii, 1177.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF
CHARLES E. SIMON, M. D.
AND
ANDREW STEWART, PH. D.

The Sputum in Carcinoma of the Lung. P. Hampeln. Zeitschrift für klinische Medizin, vol. 23.

Hampeln points out that whereas local symptoms of carcinoma of the lung, such as pain, paralysis, dyspnœa, enlargement of the lymphatic glands, etc., are rather inconstant, and hence of but little diagnostic significance, a hemorrhagic character of the sputum, associated with a considerable degree of tenacity, is so generally observed at some time in the course of the disease as to merit special attention. Most significant, however, is the presence in the sputum of non-pigmented, polymorphous polygonal cells, with well defined nuclei and nucleoli, which may be readily distinguished from the ordinary squamous and cylindrical epithelial cells. Their occurrence, either singly or arranged in groups, at any one examination, Hampeln claims as sufficient evidence to warrant the diagnosis of carcinoma. An indication as to the exact seat of the growth is thus, of course, not given; it may be merely inferred that the disease exists somewhere in the course of the respiratory tract.

C. E. S.

The Differentiation of the True from the Pseudo-Diphtheritic Bacilli. C. Fränkel. Berliner klinische Wochenschrift. 1897.

In order to distinguish the pseudo-diphtheritic bacilli from the true organisms, the following method is suggested: A culture is made on Löffler's blood serum and the temperature not allowed to exceed 35 C. After ten to twenty hours, coverglass specimens are prepared and stained with a modification of Ernst's stain, viz: for one to three minutes in acetic methylene blue, washed in water and counterstained for three to five seconds with an aqueous solution of Bismarck brown. The former is prepared by dissolving 0.1 grm. methylene blue in 2 c. c. of 96 per cent alcohol, when 95 c. c. of water and 5 c. c. of glacial acetic acid are added. The second solution contains 0.2 grm. of Bismarck brown dissolved in 100 c. c. of boiling distilled water. Stained in this manner the sporogenic granules will be seen in the true bacilli, while they are not found in the pseudo-bacilli. The granules are stained blue and the body of the cell a light brown. If this method be employed doubt will scarcely ever arise as to the character of the organisms.

C. E. S.

The Bacillus of Pertussis.

Dr. Henry Coplik, of New York City, has discovered a very minute bacillus, believed by himself and Dr. Czapelewsky, of Cologne, Germany, to be responsible for whooping cough.

(Rev'd in) Med. Rec., N. Y., Jan. 22, 1898, liii, 129. A. S.

The Contents of the Non-Digesting Stomach and Their Relation to Continuous Secretion. F. Gintl. Münchener medizinische Wochenschrift. 1897.

The writer reports upon the examination of the non-digesting stomach in 80 cases, and summarizes his results as follows: 1. A physiological continuous secretion of gastric juice does not occur. 2. Although small amounts of fluid are quite frequently found early in the morning, before any food has been taken-free hydrochloric acid can only be demonstrated in about 40 per cent of normal individuals. 3. Larger quantities are rarely found, and are then probably always the expression of an increased irritability of the gastric mucosa. 4. The chief characteristic of a chronic, continuous secretion is the abnormal relation existing between the strength of the stimulus given and the resulting degree of reaction. 5. Cases undoubtedly exist in which the continuous secretion is the primary factor, and not merely a symptom of the disease. C. E. S.

On Digestive Hyperleucocytosis and Digestion. R. Burian and H. Schur. Wiener klinische Wochenschrift. 1897.

In normal individuals an increase in the number of leucocytes was usually observed sooner or later after the ingestion of a meal, but cannot be considered as constant. They hence conclude that the symptom is of little importance from the standpoint of diagnosis. By carefully estimating the elimination of nitrogen through the urine at the same time they conclude that a definite relation does not exist between digestive hyperleucocytosis and resorption. The writers believe that the hyperleucocytosis is merely an expression of an attempt on the part of the body to defend itself against obnoxious material introduced from without.

C. E. S.

Further Observations on the Relation Existing Between the Elimination of Uric Acid, Hyperleucocytosis and Hypoleucocytosis. W. Kühnau and F. Weiss. Zeitschrift für klinische Medizin. vol. 32.

The results communicated in the present paper essentially bear out the correctness of Kühnau's well-known view that a definite relation exists between the elimination of uric acid and leucocytosis. In those cases in which a hyperleucocytosis was experimentally produced an increase in the elimination of uric acid and xanthin bases could be observed either on the same day or upon the following day, which was essentially proportionate to the degree of increase in the cellular elements. In several cases of hypoleucocytosis a corresponding diminution in the amount of uric acid was observed.

C. E. S.

Leucocytes and Bacteria.

Dr. A. Schattenfroh, in a paper of high scientific interest, on the bactericidal properties of the blood and blood serum, corroborates the theory of Buchner, Hahn and Denys, who maintain that the leucocytes themselves possess bactericidal materials, which are potent when separated from the living cells. He thinks it possible that these principles of the leucocytes and the alexins of the blood are identical.

Archiv. f. Hygiene, Vol. xxxi, part 1, (Rev'd in) N. Y. Med. J., Jan. 15, '98. lxvii, 91.

A. S.

Ehrlich's Tri-acid Stain.

Dr. Hensey Thomas, of Philadelphia, calls attention to a new modification of the above stain according to Neusser, of Vienna. Those who have struggled with the difficulties incident to the preparation of the tri-acid stain will hail with pleasure any means of overcoming them. The directions are as follows:

Make concentrated watery solutions of

Methyl green,
Orange G.
Acid Fuchsin (*extra*).

Allow these to stand for some time, adding more of the stain every day until there are constant residues at the bottom of the bottles.

Then mix as follows:

Acid Fuchsin	50cc.
Orange G.	70cc.
Methyl Green	80cc.
Aq. Dist.	150cc.
Abs. Alcohol	80cc.
Glycerin	20cc.

The stain should be kept away from

air and light. This is best accomplished by putting in colored bottles—green is best. Do not shake the solution before you stain. When a metallic luster is seen on the top add more alchol.

Let the solution stand at least three weeks before using it.

The solution stains:

1. Erythrocytes, by acid fuchsin and orange G.
2. Nuclei of leucocytes, methyl green.
3. Alpha granulations, acid fuchsin.
4. Epsilon granulations, different intensities of violet.
5. Perinuclear Basophilia.

Microscop. Bul. and Sci. News, Phil., Dec. 1897, xiv, 47.

A. S.

The Blood in Malaria.

At a meeting of the Med. Soc. Co. N. Y., on Jan. 24, papers were read by Drs. Henry Heiman and Richard Stein, Drs. Ewing and Manges taking part in the discussion. Dr. Heiman stated that the form of malaria observed in New York and its vicinity was nearly always of the tertian type. He favored the formalin method of fixing blood smears. Dr. Heiman further discussed the blood in Hodgkin's Disease. Dr. Stein enlarged upon the aspect of the blood in the different sorts of malarial fever. He declared the examination of blood for the plasmodium, in suspected malaria, to be of the greatest value, but warns that in some few typical cases it has not been discoverable. Dr. Ewing said on this subject: "That, if an examination of the blood immediately after the first chill, and before quinine had been given, failed to disclose the plasmodium, he would feel quite sure that the case was not one of malaria. The feeling of distrust among clinicians regarding these examinations was due to a wrong point of view. The malarial organism was not found, for instance, in chronic malarial cachexia, or even in a first attack of tertian malaria after quinine had been given for some time. It was sometimes absent, also, in cases of æstivo-autumnal fever that had run a long course, but in the first attack, quinine not having been given and the attack being sharp and distinct, the organism could be found in sufficient numbers to make examination easy." He preferred the alcohol-ether method of fixation. Dr. Manges uses the thionin method, on account of simplicity and quickness of application. Med. Rec., N. Y., Feb. 5th, 1898, lii, 208.

A. S.

On the Differentiation between Albumin and Albumoses in the Urine. Bourceau. Comptes rend. 1897.

The reagent which Bourceau employs consists of two parts of oxyphenyl acid and one part of sulphosalicylic acid. A few drops of this mixture are added to the native urine. in the proportion of one drop for every cubic centimeter of urine. Only those albumins which are coagulable by heat, viz: serum albumin and serum globulin, are thus precipitated, while albumoses and pentones remain in solution. Phosphates and urates remain uninfluenced. C. E. S.

On the Relation Existing between Fever and Albumosuria. E. Schulthess. Deutsches Archiv. für Klinische Medizin. Vol. 58.

As it is possible to artificially call forth an elevation of temperature by subcutaneous injections of albumoses of whatever origin, Schulthess investigated the frequency with which albumosuria is observed in febrile, as compared with non-febrile diseases.

In the afebrile cases albumoses could only exceptionally be demonstrated—one case of ulcer of the stomach, one of carcinoma of the stomach, and three cases of articular rheumatism, unaccompanied by fever—whereas a positive result was obtained in 90 per cent of the febrile cases. C. E. S.

A New Test for Albumin in the Urine. Simon. Maryland Medical Journal, 1898.

Simon again calls attention to his observation that in the presence of albumin a distinct cloud develops at the top of the fluid, when, as in Sjoqvist's modification of Jaffe's test for indican, the sodium hypochlorite solution is added to the mixture of urine and concentrated hydrochloric acid. The two tests may thus be suitably combined. The delicacy of the test apparently equals that with nitric acid. Further observations are

necessary in order to determine whether albumoses are thus also precipitated.
C. E. S.

Dyspeptic Albuminuria.

Dr. Robin, in an able article of recent date, takes up the so-called functional albuminurias. He deals particularly with that of dyspeptic origin and its differentiation from all other functional albuminurias, and from that due to Bright's lesions. The patients complain of gastric hypersthesia, stomachic distention, hepatic enlargement and constipation. They are emaciated, given to vertigo, weakness and exhaustion. Odema has *never* been observed. The urine exhibits transitory or permanent albuminuria—serum albumin, without globulin—but *no casts*. Indican and oxalate of lime are present. The coefficient of nitrogenous oxidation is increased, as is mineral elimination. Pulmonary interchange is diminished. Dr. Robin ascribes the appearance of albumin to faulty digestive assimilative change in the stomach; the proteid being, therefore, eliminated as a foreign substance. The prognosis is favorable only in the early (or intermittent) stages; the treatment is dietary. Journal d'Accouchments, Aug. 22, '97. Rev'd in Med. Rec., N. Y., Jan. 22, '98.
A. S.

The Ferrocyanide Albumin Test.

Dr. J. M. King maintains that the test performed according to his method precipitates nothing but the different forms of albumin and does not precipitate phosphates, urates, peptone, resins, alkaloids, etc.

Acetic acid sp. gr. 1.044.

Potassium ferrocyanide grs. xxiv to f℥i dist. water.

Into a clean test tube pour 15-20 drops of the acid; add 2-3 times as much of the ferrocyanide solution, and shake; fill tube ½ to ⅔ full with urine and control with a tube of urine alone.

Med.-Surg. Bul., Nov., 1897.

Rev'd in Cleveland Med. Gaz.

[There is nothing new about this test, and it is given here merely on account of its corroborative value. It is of the greatest importance, especially in dealing with minute quantities of albumin, to filter the urine carefully before this test or in fact before any of the albumin tests be applied. If filtration in the ordinary way (on account of bacterial activity), does not suffice, a crystal-clear filtrate may be obtained on passing the urine, with the assistance of a vacuum pump, through thoroughly cleansed, wet asbestos fiber. A. S.]

The Estimation of Xanthin Bases in the Urine. R. Flatow and A. Reizenstein. Deutsche medizinische Wochenschrift. 1897.

As the result of a careful study of the Krüger-Wulff method for estimating the xanthin bases in the urine, Flatow and Reizenstein confirm the objections of Salkowski that the figures obtained are far too high, and that the error incurred is unfortunately not a constant one. It is hence advisable to return to the old silver method of Salkowski. According to the latter the average daily elimination of xanthin bases amounts to but 0.029 grm., whereas 0.2069 grm. is obtained with the method of Krüger. The ratio between the uric acid and xanthin bases elimination similarly varies between 1:10 to 1:32.6 and 1:1.7 to 1:4.1, respectively. C. E. S.

A Simple Modification of Hopkins' Method for the Quantitative Estimation of Uric Acid in the Urine. O. Folin. Zeitschrift für physiologische Chemie, vol. 24.

100 c. c. of urine are treated with 10 grms. of ammonium sulphate and a sufficient amount of ammonia to cause a faintly alkaline reaction. The mixture is allowed to stand for two hours, when it is filtered and the precipitate washed with a 10 per cent solution of ammonium sulphate until all chlorides have been removed. By perforating the filter the precipitate is washed into an Erlenmeyer flask with the aid of hot water; the mixture is allowed to cool, the ammonium urate decomposed with a little dilute sulphuric acid and 15 c. c. of concentrated sulphuric acid added. The uric acid is then titrated with the 1-20 normal solution of potassium permanganate as usual. Every c. c. of this solution represents 0.00375 grm. of uric acid. A final correction is then made by the ad-

dition of 0.001 grm. for every 100 c. c. of urine.

The method is certainly to be commended for its greater simplicity than the original method of Hopkins, and coming from the laboratory of Salkowski, merits attention and confidence.

C. E. S.

On Hæmatoporphyrinuria. Schulte. Deutsches Archiv für klinische Medizin, vol. 58.

Two cases of hæmatoporphyrinuria are reported; the one following the long continued use of sulphonal, the other being possibly referable to lead poisoning, It is interesting to note that while the abnormality disappeared upon withdrawal of the sulphonal it recurred some time thereafter, although the drug had not been resumed. C. E. S.

Test for Hæmatoporphyrin in the Urine. A. E. Garrod. Centralblatt fur innere Medizin. 1897.

In order to demonstrate the presence of traces of hæmatoporphyrin in the urine, Garrod suggests the following method: 300-500 c. c. of urine are treated with a 10 per cent solution of sodium hydrate—20 c. c. for every 100 c. c. of urine. The precipitate is washed with water dissolved in alcohol acidulated with hydrochloric acid and examined spectroscopically: acid hæmatoporphyrin. In order to obtain the alkaline product the solution is rendered alkaline with ammonia; treated with acetic acid until the precipitate which is formed upon the addition of the ammonia redissolves and extracted with chloroform. The latter takes up the coloring matter. With this method it may be demonstrated that traces of hæmatoporphyrin are present in every urine. If larger quantities are likely to be present Salkowski's method should be preferred.

C. E. S.

Alkaptonuria.

In the N. Y. Med. J., Dr. Thomas B. Futcher, of the Johns Hopkins Hospital Staff, presents a paper of high scientific interest bearing the above title. Alkaptonuria is not a disease but a condition and has no pathological significance, according to Dr. Futcher. Of rare occurrence, he regards it as, however, not an unimportant phenomenon, as the urine of those subject to it presents some of the characteristics peculiar to glycosuria, this, in more than one case, having led to serious alarm and needless expense. After a review of the literature on the subject, Dr. Futcher describes a case coming under his own notice and then very happily sums up the characteristics of the urine in alkaptonuria as follows:

"The urine is usually from a straw to an amber-yellow color when first voided, assuming a gradually increasing reddish-brown color on exposure to the air, owing to the absorption of oxygen. The specific gravity under ordinary hospital diet varies between 1.010 and 1.014; with excessive meat diet, 1.014 to 1.020. The average quantity excreted daily while on the former diet is about two litres, and while on the latter diet 1.5 litre (Baumann). On the addition of a few drops of an alkali to the urine and then shaking, the assumption of a reddish-brown color is almost instantaneous." (Hence the name: alkali and to absorb greedily.) "Fehling's copper solution is reduced on the application of heat. The urine does not respond to the bismuth, phenylhydrazine, fermentation or polariscope tests for sugar. It reduces ammoniacal silver-nitrate solution in the cold and causes a bluish-green color on being added to ferric-chloride solution, the color usually being temporary." The writer points out that alkaptonuria may be associated with glycosuria; but if negative results were obtained with the bismuth, fermentation, phenylhydrazine and polariscope tests, the latter might be ruled out. As to the cause of the urinary peculiarity, great diversity of opinion existed. It had been ascribed to the presence of such bodies as uroleucinic acid, dioxyphenylacetic acid, etc., etc. N. Y. Med. J., Jan. 15, 1898, lxvii, 69.

A. S.

Improved Method of Detecting Casts in the Urine.

Dr. Walter S. Haines and Dr. James E. Skinner, recognizing the errors incident to the usual means resorted to in obtaining urinary sediment for microscopical investigation, propose a new combined natural and artificial sedimenta-

tion method, to be followed especially in the search for casts. About 250 cc. of fresh urine, to which are added a gram or two of chloral hydrate dissolved in a few cc. of warm water, are poured into a cylindrical druggists' percolator, closed with a perforated stopper, through which passes a glass tube about 4 cm. long, closed in turn with a piece of rubber tubing bound by a pinch cock. The apparatus so formed is, prior to the introduction of the urine, to be cleaned and sterilized (boiling water, or formaldehyde). It is closed with a glass plate and set aside with its contents, for 18 to 24 hours, in a cool place. This method is particularly recommended in those instances where the investigator is dealing with large quantities of urine containing a small light sediment, as in suspected interstitial nephritis. If the sediment or cloud will not sink of itself to the bottom, it may be brought down by opening the pinch cock; and by the same means is easily drawn off and examined. It is found expedient to collect it in one or more centrifuging tubes, which are then placed in the machine and rotated as heretofore. This procedure gives with exceeding accuracy the entire sediment of the 250 cc. of urine, condensed into a very convenient and small space; its chief defect lies really in its great delicacy, as, by its employment, its introducers claim to have found casts in nearly all specimens of urine examined by them; even in that of perfectly healthy individuals. Dyes for staining casts may be added to the centrifuging tubes. Jour. Am. Med. Ass., Chicago, 1898, xxx, 234.

A. S.

The Effect of Bicycle Riding on the Urine.

Dr. Douglas Brown, of New York City, reports the results of a series of examinations of the urine of the participants in the recent six-day bicycle race at that place. The examinations were performed while the race was in progress, with the object of ascertaining what effect so protracted a strain and consequent exhaustion would manifest on the kidneys. Dr. Brown concludes as follows: "In conclusion, it seems fair to assume that in a contest of this sort, or in the case of any excessive bicycle riding, providing the diet is easily assimilated and slightly varied, but little will be felt by the kidneys. The real sufferer seems to be the heart, which either has developed or struggles to develop the necessary hypertrophy."—Med. Rec., N. Y., 1898, liii, 156. A. S.

The Effect of Renal Insufficiency on Diseases of Women and Diseases of the Skin.

Dr. L. Duncan Bulkley, in a paper read before the Med. Soc., N. Y., reports some exceedingly interesting observations made by himself on the relations existing between the renal excretion and female disease on the one hand, and between the first and diseases of the skin on the other. The author, eulogizing Dr. J. H. Etheridge, of Chicago, who has likewise been active along these lines, says: "Dr. Etheridge has rendered an inestimable service to the profession and to suffering females in earnestly calling attention to the fact, which I can confirm most positively, that this insufficient kidney secretion plays a very important part in the production and continuance of many of the diseases peculiar to women. The study of the initiative cause of these diseases merits the most serious consideration of the profession." He has prepared a table setting forth the relation between the body weight of women of average health and their total daily excretion of urinary solids. This table extends from a weight of 90 lbs., with a total excretion of 500 grains, to 180 lbs., with an excretion of 1,100 grains. He says: "This table is at the rate of about thirty-five grains additional for each five pounds of body weight, or seven grains to the pound, which is near enough for ordinary daily work. For greater accuracy there should be still some deduction for age; thus, between 40 and 50 years, deduct 10 per cent, between 50 and 60 deduct 20 per cent, and between 60 and 70 deduct 30 per cent from the amounts given above." Dr. Bulkley has his patients use an ordinary two-quart mineral water bottle for collecting the daily urine. On the side of this is pasted a paper scale graduated by filling the bottle from a two-ounce measure and so marking off;

the separate ounces can be gauged by the eye. A glass funnel is placed in the mouth of the bottle for convenience in pouring in the urine as it is passed. The scale is read off and the bottle emptied at a stated hour each day, an average sample being sent to the office along with the total quantity report. He notes that women excrete about 1-10 less urine than men. In calculating the total solids from the specific gravity, Dr. Bulkley uses Haines' modification of Hæser's method. It is very simple, as follows: "Multiply the last two figures of the specific gravity of the urine by the number of ounces voided in 24 hours and add 10 per cent to the product. Thus, if the amount passed in 24 hrs. was 36 ounces and the specific gravity 1.021, it would be $36 \times 21 = 756 +$ 10 per cent $= 831$, the number of grains of solids in the whole amount." The writer observes that, as urea under normal conditions represents nearly one half the solid constituents of the urine in his cases, where the kidneys are not organically diseased, a fair index of urea is furnished by the total solids reported. He makes the point, likewise, that the toxicity of the urine (according to Etheridge) depends at least one-half upon the coloring matter and other substances removable by charcoal filtration, and considerably upon the urinary salts of potassium. On the important consideration of aqueous elimination, he says: "* * * For even if the total amount of solids voided may be up to the normal, there is still insufficiency of kidney action and consequent ill-health if the proportion of water be not also about normal. A smaller amount of water, with a higher specific gravity, and consequently containing a normal daily amount of urinary solids, does not conduce to the good health which a normal amount of urine with a lower gravity would indicate." Dr. Bulkley went on further to say: "My own experience in regard to the value of diuretic treatment in many disorders peculiar to women dates back a good many years, and has come to me slowly though very convincingly. * * * But as I have gone on year after year, seeing and knowing of the vast improvement which occurred in my patients in regard to symptom pointing to the pelvic organs, of which they had complained, I have become more and more confident as to prospective results, when patients complained of uterine or other pelvic derangements." He then went on to report at length an interesting case of his own, in which he was consulted in his capacity of skin specialist, and in which he instituted a diuretic and laxative treatment with the happiest results, not only curing the skin trouble (indurated acne), but incidentally relieving the patient from great uterine distress—profuse and obstinate menorrhagia. He has observed the most striking instances of relief in this way in dysmenorrhea. To use his words:

"But it is in dysmenorrhea that the largest number of most interesting cases are found, and of these I could give many very striking examples. It is not at all uncommon for me to learn from a patient that since she had been under treatment the monthly flow had become more regular and natural than for years previously. Many who have suffered so severely that even opiates were required with each monthly sickness, in order to make life endurable, have, when under full treatment, absolutely lost all pain and become even unconscious as to when the menstrual epoch begins. And it has occasionally happened that a mother has brought a second daughter to me, not at all for the treatment of any skin disease, but solely for the relief of menstrual difficulties, because another daughter had found such benefit while under treatment for the skin.

"My experience in a very considerable number of cases has also led me to the belief that many of the ills and discomforts complained of at the period of the menopause, and usually more or less accredited to this condition, as though dependent upon it, are in reality due to faulty elimination, principally by the kidneys." J. Am. M. Assoc., Chicago, Jan. 8, 1898, xxx., 62. A. S.

New Test for Bile in the Urine.

Prof. Browicz, of Krakau, in hardening pieces of liver with formalin, for microscopical section work, noticed that the formalin not only preserved the contents

of the gall ducts, but imparted a characteristic green or greenish-yellow color thereto. Professor Gluzinski's attention being drawn to this phenomenon, he tried, in a series of careful experiments, the effect of formalin on the gall contents of several animals, finding that bile, when boiled for a few minutes with a little formalin, turns a dirty green color, which changes to an amethyst-violet on acidulation with mineral acids. The discovery suggested an excellent method of testing for bile in the urine, which, according to Gluzinski, may be practiced as follows:

Pour into each of two test tubes a few cc. of the suspected urine. In test tube ii, add a third as much formalin, and boil 3 to 5 minutes. In presence of bile the mixture takes on a more or less pronounced dirty green color, according to the amount of bile present. Compare with test tube i.

Now pour half the contents of ii into a third test tube, iii, and add a few drops of strong HCl, when an amethyst color will instantly result. Compare the color in all three tubes. The test is 10-15 times more delicate than the Gmelin test. Experiments with formalin in urine containing blood are in progress. Wien. Klin. Woch., Dec., 1897, 52, 1139. A. S.

Of the Symptomatology and Diagnosis of Melanotic Tumors. K. Pichler. Zeitschrift für Heilkunde. Vol. 17.

Pichler recites a very interesting case of melanotic sarcomatosis affecting the liver, lungs, myocardium, spleen, adrenal glands, bone-marrow and lymphatic glands, and in which a primary focus could not be discovered. In the urine urobilin, traces of glucose and melanin were found. In the blood the leucocytes were increased. There were present also a considerable quantity of free, intensely black, amorphous pigment and large pigmented protoplasmic bodies.

The subject of melanæmia in connection with melanosarcoma has thus far received but little attention, and Pichler's observation is thus doubly important. C. E. S.

A New Blood Test.

Prof. Schaer has devised a means of testing for blood stains, in corroboration of the optical method and the method of Teichman (formation of hæmatin crystals). A very small piece of the material with the suspicious stain is cut up fine, put into a small porcelain capsule and moistened with a drop of acetic acid. A little chloralhydrate-guaiacum solution is stirred in and the resulting clear solution poured into a small test tube. On the careful addition of hydrogen peroxide the well-known blue color due to oxidation of the guaiacum will appear at the zone of contact. Aerzt. Rundsch., München, Jan. 8, '98, 2, 22. A. S.

The Widal Reaction.

Dr. Welch, in the Jour. A. M. A., treats exhaustively the Widal Serum Test. Besides corroborating much of the data already recorded relating to the test, he brings out, together with Dr. Musser and Dr. Swan, the following points of particular importance:

The reaction may be obtained from the blood of cases of typhoid fever as early as the seventh day. In some cases it is absent at the seventh day, and in other cases it is not fully developed until later in the course of the disease. In no case was it found earlier than the seventh day, In another case it was not perfectly developed on the fourteenth day.

The reaction disappears at a varying time after the cessation of the disease. The bacilli may fail to agglutinate as early as the thirty-eighth day. The action may be perfect as long as ten years.

Quantitative determinations, relating especially to the culture, the time limits, and the dilution of the serum, are of importance, and, at least in doubtful cases, should not be neglected.

The test is valuable in diagnosing between typhoid fever and other diseases presenting a so-called "typhoid state."

The age or sex of the patient does not make any difference in the character of the reactions.

Rev'd in Atlantic Medical Weekly, 1898, iv, 79. A. S.

The National Medical Review,
PUBLISHED MONTHLY.

George W. Johnston, M. D., Thomas E. McArdle, M. D.,
Editors and Publishers.

Clinical Diagnosis:
UNDER THE CHARGE OF
Charles E. Simon, M. D., Baltimore, Md.,
AND
Andrew Stewart, Ph. D., Washington, D. C.

The National Medical Review,
No. 1437 L St. N. W., Washington, D. C.

WASHINGTON, D. C., MARCH, 1898.

HOW LONG!

Of the many duties that the State owes to the individual surely the greatest is protection. From foreign invasion, from local insurrection and disorder, from the dangers of fire and of flood, from the pestilence that hovers constantly about our shores, we look to those whom we have placed in power to guard us, so that we may pursue our business and our pleasure unmolested. We contribute in money or in service to the State, and we rightfully expect that we shall be protected in our life, in our liberty, and in the pursuit of happiness.

Many of the risks that threaten us are regarded as preventable, and against them we are offered a measure of defense; the security that we thereby enjoy reconciles us somewhat to the amount of tribute exacted. Even in the matter of disease, about which there still clings some of the old superstition as to its being a visitation of God, we are afforded some protection. Does a ship come loaded with fever from the tropics, all the resources of the Government are at once brought into play, and men trained for this special work hurry hither and thither and snuff out infection as they would a candle. Sometimes, in spite of this it obtains a foothold and great destruction is wrought; but only certain communities suffer, the great body of the people go free.

Yet, there is one great enemy that forever stalks unhindered from one extremity of this broad land to the other, leaving death, poverty and despair in his wake. We all know him; there are few households that do not look back with horror upon his visitation.

If at the beginning of the year but newly ushered in we had been brought face to face with the knowledge that within the next twelve months we must offer up to this Minotaur a half million of our people for torture, and that after he had wrung them, he would slay one out of every ten and cast back the remainder weak and prostrate, with what a shudder would we have contemplated such a picture? And yet, that is to be the record, that or worse, and this very day he is rending and killing his appointed quota of victims, nor can any man tell when his turn shall come.

We never forget the stories of great battles and their attendant slaughter, the wounds and death, the anguish, sorrow and impoverishment they have caused. But the battle with this Minotaur is fought every year, and year after year; it is we who suffer, the enemy is unscathed, and there is no glory, but only the dregs of misery for all.

And how much more horrible and unnecessary it all seems when we contemplate that this terrible enemy may, by one well directed blow, be rendered as weak and harmless as a child; that he has been utterly expelled from communities that he used to devastate.

It is against this enemy that the American people cry aloud to the State to protect them, to spare them any further exaction of blood and treasure. From

whatever aspect we regard it we have suffered too long from the ravages of this foe—Typhoid Fever. It is estimated that every year it costs us 45,000 lives, that it fills 450,000 sick beds and leads to a waste of $70,000,000. It is known that the specific poison of this disease is almost invariably carried by drinking water, and that it can be eliminated by filtration. These things have been proven over and over again. That is the whole story. And yet nothing is done.

Here is a subject at last that we can all unite upon. It can be argued from a scientific, an economic, and an emotional side. It can be agitated in every municipality. It is not influenced by differences of sex, color, creed or party. It is a matter of vital interest to the whole country. It is a stench in the nostrils of civilization.

PATERNALISM RUN RAMPANT.

In the early days of antitoxin in the treatment of diphtheria, we believe it was possible for the Health Office in Washington to procure from the Marine Hospital Service a supply for the use of the District poor. But now all this is changed, and very properly, we believe, the supply of antitoxin is bought in the open market and furnished free to the indigent sick. The conduct of the Marine Hospital Service was not of evil, but of good, effect. The plan alluded to was pursued for purely scientific purposes.

In New York, however, paternalism runs rampant, and the Health Office, in its desire to be paternal, manufactures serum for the rich and for the poor, the only difference being that the rich pay for it. We doubt very much if the health authorities have any more right to produce antitoxin than to manufacture quinine. Would anybody tolerate a Board of Charities that would start a shoe factory and furnish shoes free to the poor and at cost to the rich. Moreover, it has been claimed that it cost $60,000 to produce the antitoxin which could be bought in open market for $10,000.

A State law provides for the inspection of all antidiphtheritic serum by a board of examiners before its exposure for sale. It cannot be urged, therefore, that the city is in the business for the protection of the public, for the board of examiners should afford the public ample protection.

Aside from the matter of the cost of this product and the insurance of its purity, is the old question of the State engaging in competition with private capital. This is not believed to be either wise or just.

Notices and Reviews.

TREATISE ON THE DISEASES OF WOMEN.—By Alexander J. C. Skene, M. D., LL. D. Third Edition. Revised and Enlarged. New York, D. Appleton & Co., pp. 978, 1898.

The demand has called for another edition of Skene's work on Diseases of Women. In the preface to this edition the author says he has recognized the great advances that have been made in gynecology during the past ten years, and the aim of the present work is to bring the knowledge fully abreast of the times. It is a disappointment that some of the reading matter contained in the former editions has escaped revision. This is true of the first chapter on Methods of Examination. Bi-manual examination is considered so briefly that about a half a page of reading matter suffices to describe it. The mind of the student should be early impressed with the importance of educating the touch by constant practice, and reliance should be placed upon this method of examination as the basis of gynecological diagnosis.

The use of the uterine sound is de-

scribed, but no warning note sounded of its dangers except to avoid the employment of force. This instrument is pre-eminently popular with the beginner, and the speculum-probe combination is only too common for diagnostic purposes. The more practice and reliance one gets by bi-manual examination the less the probe is employed. The size, shape, position and mobility of the organ are better and more safely ascertained by it.

Following this chapter we miss allusion to the technique of gynecological work. Cleanliness and asepticism are too important not to receive full and separate consideration.

Chapter three, on Menstruation and Its Derangements, is taken up almost entirely with the report of illustrative cases. We are sorry this feature of the former editions is repeated in this. It makes the book voluminous and does not bring an equivalent of instruction. About twenty per cent of the reading matter of the book is composed of the report of cases.

Chapter four treats of Flexions of the Uterus, and we feel too much importance is attached to the condition. A certain amount of anteflexion is normal, and only exaggerated degrees, accompanied by marked symptoms (dysmenorrhœa), demand attention. The author recommends treatment apparently without reservation, and few at the present day will follow his method. The diseased endometrium is an important factor in the production of symptoms resulting from flexion. Elliott's uterine adjuster, Skene's hysterotome, and the intra-uterine stem pessary have given place to thorough dilatation, curettage, the application of carbolic acid with gauze packing, or the insertion of a hard rubber drainage plug. Dr. Skene's statement that "dilatation is certainly of much value, but the improvement is often, indeed generally, only temporary," must be taken with allowance in view of what he says later that he does not approve of carrying dilatation beyond that which is sufficient to admit a number twelve or sixteen English sound.

Chapter seven, on Injuries of the Pelvic Floor, has been rearranged, and we especially commend the illustrations of this part of the book. The author still recommends waxed silk for suture material in sewing up perineal and cervical lacerations.

Chapters eight to sixteen, inclusive, remain practically the same as in the first edition.

Chapters seventeen, eighteen and nineteen consider fully the Dislocations of the Uterus. Some additional matter is noticed, and a number of new illustrations add to the elucidation of the text.

Alexander's operation does not stand in high favor with Dr. Skene. He says he has "never found that patients save time or money by Alexander's operation if they were curable in the old way." Occasional absence of the round ligaments and the subsequent occurrence of hernia in many cases are his main arguments against it. Intra-abdominal shortening of the round ligaments receives only passing mention.

Ventral fixation is rejected on the ground, "first, it is an abnormal condition and on theoretical grounds it is not good surgery to produce one morbid state to cure another if it can be avoided, and, in the second place, this fixation of an organ that should be movable quite often causes suffering as bad as, or worse than the displacement." These conclusions are based on a faulty technique. The method the author has employed was to fasten the uterus to the abdominal wall by a continuous suture passed through the peritoneal covering of the uterus and through the peritoneum and muscular layer of the abdominal wall. These cases suffered afterwards because, as he says, "the uterus remained firmly fixed to the abdominal wall." This result will not follow if two fine silk sutures are carried through the peritoneal covering and into the uterine tissue on the posterior aspect of the fundus, and through the peritoneum and subperitoneal tissue of the abdominal wall. In a short time afterwards the position of the uterus will be found anatomatically correct, and the mobility unimpaired in every direction except backwards. Moreover, the subsequent occurrence of pregnancy and labor, would entail little, if any, ad-

ditional danger. Dr. Skene finally adopts the method of fastening the utero-ovarian ligaments at their junction with the uterus to the abdominal wall with fine chromicized catgut, hoping that the organ will be held in position artificially long enough for the natural supports to regain their strength.

The distinctively new feature of the book relates to the advocacy of compression and electric heat to control hemorrhage in surgical operations *in lieu* of the ligature. Nearly twenty years ago Keith employed the clamp and cautery in treating the pedicle in ovariotomy. During the past three years Dr. Skene has found the same method of closing bleeding vessels applicable to all surgical operations. Hitherto the difficulty of using compression and heat to arrest hemorrhage has occurred in the management of the heat element. Dr. Skene describes the process as follows: "A portion of the end of the vessel, or mass of tissue containing bleeding vessels, is seized in forceps or clamp and firmly compressed, and while under pressure heat is applied to the instrument to desiccate or dry the parts, but not to char them. In this way the walls of the arteries become united and hemorrhage is certainly prevented. * * * With the determination of improving the process and adapting it to the arrest of hemorrhage in all surgical operations, I have employed electricity to produce the required heat and devised instruments to meet all requirements." Advantages claimed besides the hæmostatic effects of the cautery are: The lymphatics are sealed up, the nerve trunks are devitalized, and hence there is less pain in the stump, and the heat sterilizes the part.

Hæmostatic forceps of different sizes are employed, and they are constructed in such manner that one jaw is heated by an electric current applied during the compression. The length of time during which the forceps should be heated varies from thirty seconds to two and a half minutes, according to the thickness of the tissue engaged in the bite of the instrument. The current is supplied by a small storage battery or a hand-driven dynamo. The author describes the technique of vaginal hysterectomy by using the electric hæmostatic forceps.

So much for the method. The future holds the verdict in store. If a success, the profession will be under lasting obligations to Dr. Skene, and the publication of the third edition of his work will mark an era in gynecological surgery.

H. D. F.

AMERICAN YEAR BOOK OF MEDICINE AND SURGERY. Issued under the editorial charge of George M. Gould, M. D. One vol., 1200 pp., illustrated. Cloth, $6.50 net; half morocco, $7.50 net. W. B. Saunders, Philadelphia, 1898.

The published reports of the work of the past year in all countries and in all departments of medicene, studied, revised and condensed by a number of medical men each a leader in his chosen field, this rich material simply and logically arranged, provided with an excellent index, and presented in an attractive and forcible manner, is what constitutes this Year Book of Medicine and Surgery. It is large and full of the most various knowledge; and yet to lay the finger on the point at issue, the question in dispute, the item sought for, the authority desired, is but the work of a little moment. The personality of the editor of each of the numerous divisions informs and enlivens it, and a discriminating review prefaces every solid array of facts.

This Year Book is a work of great great practical utility and will be of service to all who are in search of information. But aside from that, it serves well another purpose. It gives, like the points of refuge in the crowded London streets, a moment of pause, whence we, ourselves at rest, can watch the interminable stream pass by—a stream of toilers each bearing his contribution to the great storehouse of knowledge, an unending procession of devotees, a majestic crusade against disease and death. Where in the world is there anything like it? The worker in the laboratory breathing an atmosphere surcharged with poisonous exhalations, the surgeon courting death from a pin scratch, the physician laying down his life to save a pauper, the medical officer falling in his turn beside a wounded soldier. The ordinary rewards of life

cannot pay for so much silent heroism, nor can wealth nor titles.

It was the custom in ancient days to celebrate the death of kings by hekatombs of slaves. Our own great men leave life, not death, behind them; and in the silence of his last hour our own O'Dwyer must have heard, even with his dulled ears, the music of unnumbered childish voices—the voices of those who owed their lives to him. The children of the world with their tiny contributions reared a monument to De Foe. The mothers of the world, each in her tender heart, should cherish the name of this great and modest man, who, for a little while, has parted from us.

And it is of these things that this Year Book tells, a year of research and of endeavor, of the forging of one more little plate in that armor which is to protect humanity from suffering and to put off for yet a little while inevitable dissolution. N. N. P.

THE DISEASES AND INJURIES OF THE CONJUNCTIVA—Especially the so-called granulated lids. By John H. Thompson, M. D., etc., Kansas City, Mo., 1897, pp. 216.

The medical monograph has not yet become as firmly established among us as it has in France and Germany. Whether or not it is a habit to encourage depends, of course, upon the quality of the product. In one sense it is the ideal form of publication, and when it embodies original research, either experimental or clinical, it is to be commended; but if it is simply a rehash of what has been better said in periodicals or textbooks it is superfluous and a nuisance to be suppressed. Dr. Thompson's book does not belong to the latter class, though it cannot be ranked high in the first. His purpose, as he announces in his preface, is "to assist practitioners and students in medicine to recognize and treat the diseases and injuries of the conjunctiva," and "in such a familiar style that those who read them shall not mistake the writer's meaning." It might be objected that sometimes the style is too "familiar," in so far as it is lacking in that terseness which should be looked for in every history, however elementary, on a scientific subject. A clear, direct and dignified expression should be the vehicle of all thinking upon scientific matter. A just criticism of by far too much medical writing in America is that it does not fulfill these requirements. Against the matter of Dr. Thompson's book, however, but little can be said. He holds some opinions different from our own on certain mooted questions, but that is by no means a *prima facie* evidence that he is wrong. He is a shrewd and independent observer, and a careful, conscientious and conservative practitioner. A man who is these is always worth listening to. Not only will he not lead the student and practitioner astray, but the experienced ophthalmologist will find much in the little brochure that is interesting and profitable. For our own part, we think we see many thin places in his ideas on the etiology of trachoma (to the consideration of which important disease a large part of the book is given), but we think, on the whole, Dr. Thompson's trachomatous patient would make a mistake in leaving him. The book has a number of illustrations; some—those which are borrowed—are good and serve their purpose well; others—and the original ones, we are sorry to say, are bad. BURNETT.

THE PSYCHOLOGY OF SUGGESTION. By Boris Sidis, M. A., Ph. D., Associate in Psychology of the Pathological Institute of the New York State Hospitals, with an Introduction by Prof. William James, of Harvard University. New York, D. Appleton & Co., 1898.

This research into the subconscious state of man and society will be of great value to those whose chief interest lies in the workings of that complicated structure, the human mind.

"By suggestion," the author says, "is meant the intrusion into the mind of an idea; met with more or less opposition by the person; accepted uncritically at last, and realized unreflectively, almost automatically. By suggestibility is meant that peculiar state of mind which is favorable to suggestion."

The earlier portions of the book deal with the nature and phases of suggestibility, and the subconscious self of the individual, its character, traits and laws; it is built upon the results of careful study and original investigation, and is illustrated by a host of apposite examples. But to us the greatest interest o

the work lies in that part devoted to the study of crowd psychology; and we do not remember to have read so clear an exposition and fascinating description of this, in English, somewhat novel topic. The author pictures the extraordinary effects of suggestion upon the people in all ages and countries. His descriptions of the Crusades, the great religious persecutions, witchcraft, financial inflations and panics, and the widespread religious revivals of our own day, are most vivid, and the clear manner in which he shows how the vast powers that underlay these epidemics of madness, these "blind movements of vast human masses," were evoked by suggestion, is most convincing.

In the book before us we see side by side the methodical and painstaking care of the student and investigator and the imagination of the romantic historian.

N. N. P.

ORTHOPEDIC SURGERY, By James E. Moore, M. D. W. B. Saunders, Philadelphia, 1898.

After a full and instructive introductory chapter, the author treats in detail the deformities of the spine and thorax. The majority of cases of scoliosis, he says, are known only to the mother and the dressmaker. The modern treatment as developed by Roth is given in its minutest detail. The machine invented by Schede and modified by Weigel and others, is favorably mentioned. Torticollis receives a chapter by itself, and the mechanical and surgical methods of treatment are fully explained. The causes and pathology of Pott's disease are rapidly sketched, while the symptoms and treatment are discussed after the manner of one fully conversant with the subject. A short reference is made to Gibney's "typhoid spine."

The author gives a better prognosis in infantile spinal paralysis than we would do from our experience. We hope, in the second edition, the subject of progressive muscular atrophy will receive more attention and fuller details will be given for differentiation from infantile spinal paralysis. We agree fully with all that is said in the chapter on infantile cerebral paralysis and pseudohypertrophic paralysis. The description of the different varieties of club-foot is clearly and concisely given, and the treatment is in full accord with the views of all modern orthopedists. We think operation for hallux valgus will give more satisfaction than any mechanical treatment yet devised. This will be especially true if the patient be a man. Hammer toe and metatarsalgia receive proper mention. Jacobi said that thirty years ago, rickets was a very rare disease in America. Moore says, and we fully agree with him, that at the present time it is not uncommon in every city in the United States. The author considers the three stages of incubation, deformity and recovery; and discusses the mechanical and operative treatment employed to overcome the various deformities of the spine and extremities under their various headings.

Two short chapters are given to the consideration of bow-legs and knock-knee. Rizzoli's osteoclast is commended, and the author says he cannot recommend it too highly.

Coxa vara, according to Moore, exists more frequently than we are aware of, though his experience is limited to one case. Deformities of the hand are well illustrated.

From chapter 15, where neuromimesis is spoken of until chapter 24, where congenital dislocation of the hip is mentioned, the author goes over the whole subject of diseases of the joints, perhaps the most important branch of orthopedic surgery. In no department of surgery have more radical changes taken place. As the writer so aptly says, instead of directing our efforts toward reducing the heat, redness and other symptoms, we endeavor to remove the cause and allow nature to do the rest.

Whilst we do not agree with Prof. Moore in all he says concerning the great benefits to be derived from mechanical treatment, and whilst we are of the opinion that surgical procedures will save time and accomplish better results, yet we are willing to confess that his knowledge of mechanics may be greater than ours, and his experience with instrument-makers much more satisfactory.

We take great pleasure in commending this book to every student, and we are certain that its reading will prove profitable to every practitioner. M.

Reprints and Pamphlets Received.

Denison (C.) The antitoxin treatment of tuberculosis. Repr. J. Am. Med. Ass., Feb. 5, 1898. The auscultoscope or phonendoscope vs. the binaural stethoscope. Repr. J. Am. Med. Ass., Apr. 24, 1897. Goldstein (M. A.) The Texas screw worm and its invasion of the nacal cavities. Repr. Laryngoscope, Dec., 1897. Bilateral syphilitic ulceration of the auricle. Repr. Laryngoscope, Jan., 1898. Advanced method in teaching the deaf. Repr. Laryngoscope, June, 1897. Newman (R.) Electric treatment in gout and the uric acid diathesis. Repr. Medical Rec., N. Y., Dec. 11, 1897. Bulkley (L. D.) "Deficient excretion from kidneys not organically diseased and some of the diseases peculiar to women," and diseases of the skin. Repr. J. Am. Med. Ass., Chicago, Jan. 8, 1898. Schaefer (T. W.) Examination of the urine as a means of diagnosis. Repr. Kansas City Med. Index, Nov., 1897. Rumbold (T. F.) Vocal hygiene. Repr. St. Louis M. & S. J., Feb., 1897. The functions of the tensor tympani and stapedius muscles and incidentally the mechanism of tinnitus aurim. Repr. Laryngoscope, St. Louis, Sept., 1897. Rumbold (Dr. Thomas F.) Biographical Sketch of. Repr. Physicians and Surgeons of America. Transactions of Section of Opnthalmology, College of Physicians of Philadelphia, Meeting of Jan. 18, 1898. New York Post Graduate Hospital. Thirteenth Annual Report of the Directors for the year ending Oct. 1, 1897.

News Items.

A New Department.

THE NATIONAL MEDICAL REVIEW will hereafter undertake to furnish information in regard to any book, monograph, journal or atlas that is to be found in any of the great libraries of this city, or to make translations, prepare abstracts, collect and tabulate material or search out references. (See advertising page No. xii.)

Dr. Howard A. Kelly suggests catheterization of the ureters in the male through the bladder distended with air induced by posture of the patient.

Dr. F. H. Pratt has lately shown, as the result of certain experiments, that the vessels of Thebesius, opening from the ventricles and auricles into a system of fine branches, and thus communicating with the cardiac capillaries and the coronary veins, through which a backward flow of blood from the auricle may be conveyed into the tissue of the heart, are capable of sustaining, in certain animals, the rhythmic contractions of the organ.

According to an ordinance recently passed by the Louisville council, all physicians wear a distinctive badge and have the right of way on the public thoroughfares.

Dr. H. J. Garrigues recently said that midwives were an unmitigated evil and a relic of barbarism.

At a stated meeting of the College of Physicians of Philadelphia, January 29, Dr. Arthur V. Meigs read a paper entitled: "Reasons why the placarding of houses in which are persons suffering with scarlet fever and some other contagious diseases should not be continued."

Pye-Smith ridicules the various mineral baths, arguing that water has the same action, whether it comes from a spring or a boiler, and that the mineral constituents that these springs may contain would have the same action if introduced into pure water.

Chaumier, in a recent number of the *Lancet*, discusses some of the derivatives of creosote. He speaks particularly of the anesthetic and antiseptic properties of guaiacol; of the value of creosotal as an intestinal antiseptic, especially in typhoid fever; and of the value of guaiacol carbonate as a substitute for iodoform in surgical dressings.

About 100 physicians held a meeting in this city February 17, to protest against the present service and charges of the Chesapeake and Potomac Telephone Company, and to devise ways and means of improving the service and reforming its abuses. Every one present pledged himself to have his telephone removed unless the company shall give some satisfactory plan of charges and unlimited service.

At the meeting of the Medical Society of the District of Columbia, February 16, Dr. D. S. Lamb, among other valuable specimens, presented the ruptured Graafian follicle from a cow and a teratological specimen of great interest. Dr. T. N. McLaughlin read the paper of the evening on "The Uric Acid Diathesis in its Relation to Skin Diseases." Drs. W. W. Johnston and J. C. McGuire participated in the discussion which followed.

Injury to the Spinal Cord was the subject for discussion at the regular meeting of the Clinico-Pathological Society, February 15; Dr. Tompkins opened the discussion by narrating the histories of two cases.

Dr. Riviere reports that he has employed in the treatment of a certain number of nasal affections a fluid extract of the pituitary mucous membrane. The results are analogous to those produced with other substances that are efficient in cases of perforation of the septum, rhinitis sicca, and rebellious syphilitic disease of the nose.

According to Tokonritsch, lactic acid when applied to the endometrium, checks the discharge in endometritis. A 3-per cent irrigation will destroy saprophytic and pathogenic micro-organisms in the vagina. In some cases lactic acid may be recommended as a substitute for curettage.

Mittermaier describes a fortunately rare case where a silk ligature, left in the uterine cavity by an operator after ligating the pedicle of a submucous fibroid previous to its removal, became a nucleus of infection, causing suppuration, pyosalpinx and septic fever.

Prof. Munk, in Virchow's Archives, absolutely denies that the removal of the thyroid in animals either necessarily causes death or inevitably leads to myxedema. He has never seen myxedema develop in animals and doubts if any one else has.

Walsh writes from Berlin to the *Therapeutic Gazette* that it is undoubtedly a streptococcus

that causes the most dangerous mixed infection in diphtheria, but nothing has become clearer recently in bacteriology than that under the former streptococcus one has to do with a large variety of very differently virulent and variously pathogenic micro-organisms.

McFarland says, in the *Medical Record*, that palsy is not a result of the antitoxin in the treatment of diphtheria, yet palsy is more common in cases in which the infection has been resorted to. It is because the patient lives that he has palsy. Without the antitoxin he would have died on account of the virulence of the toxin absorbed.

Desiring to learn the effects of the recent resolutions of the Medical Association upon attendance at the various dispensaries, notes were sent to the authorities in charge requesting the information. The Superintendent of the Episcopal Eye, Ear and Throat Hospital writes: "I doubt if there would be any perceptible difference, as to the doctors here, since the opening of the hospital April 7, 1897, have been very strict about admitting patients and have turned a number away who could afford to pay."

The Superintendent of Garfield Hospital says there is a falling off of about 25 per cent in the attendance at the dispensary.

The Resident at Children's Hospital reports number of new patients in January, 1897, 346; number of visits, 485; January, 1898, new patients, 81; visits, 97.

At the Central Dispensary there were, in January, 1897, 893 new patients and 3,093 visits; in January, 1898, 553 new patients and 1,969 visits.

These figures speak for themselves. The other hospitals and dispensaries of the city have not been heard from.

The well known neurologist, Dr. E. C. Seguin, died at his home in New York City on February 19th, aged 55 years.

Dr. Morris Manges, in a recent article upon typhoid fever in the aged, expresses his belief that the disease is not so uncommon in advanced life as is usually supposed, and thinks that it is often overlooked. Among 3,644 deaths occurring from typhoid fever in New York during the past ten years, there was a total percentage of deaths in persons over 45 of 14. The chief point of interest in typhoid in the aged is that the onset is often insidious, the symptoms vague, and the asthenia marked and progressive. Headache and epistaxis are often absent, fever is irregular and not marked, roseola frequently wanting, abdominal symptoms not pronounced, severe hemorrhages from bowels common, pulmonary symptoms always marked, congestion, hypostasis and pneumonia being very common and often leading to faulty diagnoses.—Med. Rec., N. Y., 1898, liii, 289.

Halstead describes the use of inflated rubber cylinders for circular suture of the intestine, and arrives at the following conclusions: Advantages of the inflated rubber cylinder in circular suture of the intestine: 1. The vermicular action of the bowel is arrested over the bag, and the stitches can, consequently, be placed at regular and proper intervals. 2. The distended bag unrolls and spreads out to a fine edge, the everted raw edge of the intestine, and enables the operator to place the stitches with great precision at the prescribed distance from the edge. 3. If distended intestine is to be sutured to collapsed intestine, or intestine of larger to intestine of smaller lumen, the smaller may easily be expanded to fit the larger piece. 4. Very little handling of the intestine itself by the operator is necessary. The tube from bag to syringe is used as a handle to elevate and rotate the parts to be united. 5. The cylinder takes the place of at least two assistants. The operation could easily be performed without an assistant. 6. It prevents the escape of intestinal contents and hence dispenses with injurious clamps or the fingers of assistants. 7. The entire operation, exclusive of suture of the abdominal wall, can be performed on dogs in five or six minutes, and probably in less time. The results should, I believe, be better than by any method hitherto devised.—Bulletin of Johns Hopkins Hospital, 1898, ix, 25.

Therapeutic Notes.

A Standard Remedy in Genito-Urinary Diseases.—Dr. Goedecke, of Milwaukee, was attending a lady 40 years old, who had suffered for years from an irritable bladder. He put her on teaspoonful doses of Sanmetto, four times daily, and she is now practically cured. For four years Dr. Suydam, of Alma, Mich., has prescribed Sanmetto. He looks upon it as a standard remedy in genito-urinary diseases.

The Treatment of Endometritis.—One of the chief aims of treatment in cases of endometritis is to contract the distended vessels in the mucous membrane of the uterus, re-establish normal circulatory conditions, and thus favor the absorption of exudates. Micajah's Medicated Uterine Wafers exert an antiseptic, alterative, and healing effect upon the inflamed uterine mucous membrane. Under their continued use the congestion gradually subsides; the engorged vessels assume their normal caliber; the mucous secretions disappear and exudates are absorbed.

A Perfect Co-adjutant.—Physicians should not forget that no matter what their preference may be as to the form in which milk should be used for their pa-

tients and the babies under their care, whether it is modified, sterilized, pasteurized, peptonized, treated by some other method, or natural, they can always depend on the perfect co-adjutancy of that unrivaled dietetic preparation, Imperial Granum. This preparation is acceptable to the palate and agreeable to the most delicate stomach. In extreme cases Imperial Granum is prepared with pure water only.

Neurectomy for Tic-Douloureux.—Prof. Bernays gives the history of a white woman, aged 50 years, who, for months, suffered agony from an attack of tic-douloureux. Paroxysms of pain were of daily occurrence. Four molars were extracted with only increase of pain. The parts supplied by the second branch of the fifth nerve became involved. Narcotics were avoided, but antikamnia in ten-grain doses was found to be an efficacious obtunder. Neurectomy was performed, and eight weeks after there was no recurrence of the trouble.

Diphtheria and Antitoxin. — "The amount of membrane that forms in the throat is no index of the amount of toxin that is to be absorbed. The membrane is formed alike by distinctly toxic and mildly toxic bacilli; and its extent is dependant solely upon the vegetative powers of the bacillus." This statement is made in a recent issue of the *Medical Record* by Joseph McFarland, who is widely known as bacteriologist to the antitoxin plant of The H. K. Mulford Company. This company now furnishes the highest concentration of diphtheria serum, namely, 1,000 units per cubic centimeter.

Diseases of the Kidneys and Bladder.—In diseases of the kidneys and bladder Blackistone Island Mineral Water has proven itself to be at least the equal if not superior to any of the higher priced waters on the market to-day. A well-known physician of Washington writes that a patient recently assured him she derived more benefit from Blackistone Island Mineral Water than from any other he had prescribed.

Affections of the Nose and Throat.—In the variable weather which has been prevailing for some time all over the country, every one is more exposed than ever to catarrhal diseases. Firnol is an efficacious remedy for these troubles, and it was especially devised for physicians' prescriptions in treating affections of the mucous membrane of nose and throat by means of spraying. It is not a secret nostrum, but every ingredient is made known to the doctor. W. C. Downey & Co., of Washington, D. C., will be glad to furnish literature and samples.

The Great Value of Tuberculin.—"Tuberculosis may be transmitted from one animal to another by living close together, or drinking the milk or eating the flesh of an affected animal. Under the direction of the Danish Government, Prof. Bang, during the years 1891 and 1897, tested 53,303 cattle with tuberculin: 20,665 of these animals were found tuberculous. The great value of tuberculin lies in the fact that it comes so near being an infallible test for the discovery of tuberculosis, even in its incipient stages, that the errors of diagnosis based upon its use are practically nil." (Dr. Irving A. Watson). Messrs. Parke, Davis & Co. are prepared to supply the concentrated or diluted tuberculin in any quantity and in any container desired. Prices and other information promptly furnished.

Fresh Wounds and Ulcers.—Dr. Miner Morris, of Indianapolis, says that in the whole list of dressing powders he doubts if we have any agent that will meet as great a number of indications so effectually and so pleasantly as aristol. In the treatment of corneal ulcers and chronic indolent ulcers in any part of the body aristol gives most gratifying results. It is also an excellent dressing in cases of circumcision, and it can probably be used to advantage in obstinate urethral conditions, incorporated in liquid vaseline, as has been recommended.

Baltimore, Md.

I find McArthur's Syr. Hypophos. Comp. to excel any other preparation of this kind I have ever used. I have ordered it in this city and in Brooklyn, N. Y., and to my patients as far West as Dakota, with the very best results. I am perfectly delighted with it.

JOHN CALDWELL, M. D.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M.D., GEO. M. KOBER, M.D., JAS. D. MORGAN, M. D.

MEETING OF NOVEMBER 17, 1897. Dr. S. C. Busey, President, in the Chair.

Dr. A. A. Hoehling, U. S. N., was elected a "member by invitation." His resignation as an active member was then accepted.

A CASE OF PROLONGED HEMORRHAGE FROM THE STOMACH AND BOWELS, ASSOCIATED WITH DYSPHAGIA.

Dr. Llewellyn Eliot presented the following case with specimens:

L. T., female, white, aged 36 years; of strong muscular development; menses established at 19 years, always regular and without pain; has a congenital stricture of the urethra, requiring, since birth, the daily use of a catheter. Single, never pregnant. About March or April, 1893, had spitting of blood, followed by difficulty in swallowing, which difficulty steadily increased until June 2, 1893, when I first saw her. All fluids and solids pass to a point of constriction midway of the sternum, where they cause a bubbling until they are rejected. Pressure upon this point causes pain; there is a sensitive point over the last cervical vertebra, another about the last dorsal; pressure over the cervical spot causes pain at the sensitive spot in the sternum. With the hands placed in the axillæ and an attempt being made to lift the body, a pain starts at the cervical spot and ends at the sternal spot, the pain being described as knife-like; has retained nothing for a week. Bowels move only in response to enema, with hard, blackened motions. Does not suffer from hunger. No history of hysteria. Twenty-six years ago swallowed a pin, but had no inconvenience following. The diagnosis was made of stricture of the esophagus from ulceration or from pressure of an external abscess. The treatment advised was, dilatation by bougies, nourishing enemata, and giving the stomach rest. During the evening of June 1 "something gave way," and she threw up a mass of greenish stuff, of a disagreeable taste; about two hours after ate toasted bread. In swallowing the bread, complained of a scratching at the former seat of the bubbling. On the 16th and on the 24th there were similar discharges with relief.

June 28. Passed esophageal bougies with pain and difficulty. Vomited a quantity of frothy mucus. Menses appeared during the operation. During the night had a great deal of pain and vomiting of blood. This continued until the 2d of July, when it became less.

Was given fluid extract of ergot, gtt xx, every four hours. Bowels constipated; swallowing difficult. Nourishing enemata given.

July 3. Bleeding checked; enemata continued.

July 13. Has had bleeding from bowel since 10th, preceded by cramps. ℞. pulv. opii, gr. ¼; plumbi acetat, gr. v., every three hours.

July 15. Has had several very free bleedings. ℞. pulv. opii, gr. ¼; plumbi acetat, gr. x, every four hours.

July 17. Has had no bleeding.

July 19. No bleeding; "feels a lump in the throat;" this feeling is usually a precursor of hemorrhage.

July 22. At one o'clock on the morning of the 20th vomited blood; soreness in deglutition to-day, but swallows well; slight cramp in abdomen.

July 27. On 23d no blood vomited

August 3. Is better; slight bleeding from bowel.

August 8. Bleeding from stomach and bowel profuse; came on after dinner; sugar of lead given in large doses.

August 9. Bleeding stopped.

August 13. Has cramps in abdomen, numbness in the limbs; legs are very weak; stop lead acetate as some symptoms of lead poisoning and give 5 grains of gallic acid every three hours.

August 16. Vomited supper and a little blood; blood also passed from the bowel.

September 27. Passes blood by the bowel as often as three times each day. Cannot swallow anything. Spits up blood, pus and membranous shreds; has pain in abdomen, legs and thighs.

October 4. Has swallowed nothing for nearly two weeks.

October 11. During the past week hemorrhages have continued. This morning ate meat, drank coffee and part of a bottle of sarsaparilla.

October 14. Does not retain anything; vomits blood and passes blood from the bowels. In attempting to swallow fluids they are ejected through nose and mouth.

December 1. Still bleeding; is not losing flesh; looks well.

December 18. Has not eaten since November 23, thirty-six days; constipated; enemas of egg and beef tea; bleeds from mouth at frequent intervals during the day; feet swollen, having been so for two weeks.

December 9, 1895. Bleeding at regular intervals; has spells of sinking and unconsciousness; abdomen very much sunken and tender to touch; still vomits and bleeds from rectum; enemas continued; is unable to swallow, and is losing flesh and strength.

March 23. Has spells of unconsciousness lasting for hours; still bleeding; is very much emaciated; has much pain over abdomen.

March 26. Condition improved in that she retains enemata.

April 2. Bleeding from bowels and from stomach.

June 6. Some appetite. Emaciation is very great; tenderness at xyphoid cartilage and over entire abdomen; bowels absorb enemata at times; still vomits blood.

December 19. On awakening, called for food, swallowed it, and it was rejected; attempting it again, she retained it; the vomiting has stopped and she retains food; has become quite deaf, and passes her urine without catheter, although she has used catheter her entire life.

March 8, 1897. Is walking about and is going through her original symptoms, swallowing and then rejecting her food.

May 11, 1897. The patient died to-day. During the past six weeks she has swallowed and rejected her food, and for the past month passed blood, pus and

mucus from the bowel. The necropsy was made by Dr. D. S. Lamb:

"At the examination the body was found much emaciated; esophagus pervious throughout; no stricture; some superficial ulcers apparently of recent occurrence; lungs normal; heart showed brown atrophy; weighed only 4 ounces; the right auriculo-ventricular opening admitted but two fingers, the left only one; stomach contracted; a few superficial erosions and punctated hemorrhages; small intestines pale and thin; liver small, dark, somewhat congested; one cavernous angioma; spleen small, capsule thickened; pancreas and suprarenal capsules normal; kidneys atrophied; meatus urinarius patent; some clear urine in bladder; uterus and appendages normal."

The points of interest in this case are: The continuance of the symptoms of stricture of the esophagus and the prolonged hemorrhages without adequate lesions; the large doses of acetate of lead given and the length of time she was sustained by nutritive enemata.

DISCUSSION.

Dr. E. B. Bishop said: The case is peculiarly interesting to me because of two cases of my own which resemble it. One is in a young woman, 25 years of age, who, in addition to excessive vomiting, suffered from excessive eructations of gas. She was so much emaciated as to be reduced to 87 pounds. She has not had an attack for several months, and she has reached a weight of 115 pounds.

The other case under my observation was not so successful. It was a case of six years standing, sent me by Dr. Repetti. She had been unable to retain anything on her stomach but a small piece of toast and a cup of coffee in the morning. After a treatment of one month she began to retain food, and in a short time she was eating indiscriminately. Owing to some nervous shock she began to return to her old condition. There was no history of vomiting of blood in either of these cases.

Dr. D. S. Lamb said: I must say for myself that I had doubts about the truth of the statement of the vomiting of blood, especially when taken in connection with admitted deception in other directions. In answer to Dr Adams' inquiry, he said that there was no extravasated blood found in the mucous membrane or in the cavities. There was no ulceration of the intestines; they seemed to be simply in a condition of atrophy from want of use.

Dr. A. F. A. King asked Dr. Eliot whether he, himself, had ever seen any of the hemorrhages.

Dr. Eliot: Yes. This autopsy did not include the brain because there were no brain symptoms during the time that I attended her. So far as the surreptitious taking of food is concerned I have only to say that she was in an institution where she did not have the keys and where she did not have anything to eat except what the attendants gave her. I do not understand myself where this blood came from. The vomited matter was submitted for examination by Dr. Barton. I think it showed nothing but mucus, blood and some other substances which I do not remember.

I. RECURRING CANCER.

Dr. D. S. Lamb presented the following case: A colored woman about 34 years old; single; her menses began at 15 years of age; at 21 years she had a child; labor normal; she had no further pregnancy. In 1892 her abdomen began to enlarge; fluctuation was made out and she was tapped by Dr. G. R. L. Cole. The fluid reaccumulated. She had leucorrhœa, pains down the thighs and constipation. Was admitted to Columbia Hospital Jan. 24, 1894, and on Feb. 1, Dr. J. W. Bovée, who gives this part of the history, operated, opening the abdomen and removing the following specimens, namely: 1st. Right ovary converted into a cyst, containing 3 gallons of fluid, with here and there flat

nodules in the cyst-walls, varying in size and undergoing degeneration. The cyst was adherent to the intestines and anterior abdominal wall as high up as the liver and stomach; and on the left side in front of the broad ligament. 2d. The left ovary, which was normal, was partially removed, and with it the tube which was dilated and its fimbriated end enlarged by a watery cyst, as large as an orange, surrounded by adhesions. Patient recovered except for œdema of arms and legs, and was discharged May 11. Microscopical examination of the wall of the cyst showed it to be cancerous.

Later on she came under the care of Dr. D. H. Hazen, who has not yet furnished a history. She died Aug. 1, 1897. At his request I made an examination which showed that she died of apoplexy.

After giving a detailed account of the post mortem examination, Dr. Lamb exhibited the brain, showing the hemorrhage; a portion of liver with cancer nodules; the right kidney, showing dilatation; and also the right ureter, which was dilated down to a band, apparently inflammatory in nature. The points of interest in this case may be stated as follows:

1st. There was a cancer of the ovary early in 1894, as shown by microscopical examination; how long before that time it had existed we can only surmise. About 3½ years after the operation she died, and the necroscopy showed soft cancer nodules of liver and a firmer one in the kidney. The removed ovary was now re-examined, and again the conclusion reached that it was carcinomatous. From the well-known rapidity of growth of soft cancers, it is difficult to understand how the tumors found, after death, could have been *secondary* to that of the ovary. Of course, if not so secondary, then that in the kidney must have been primary. I think this aspect of the case is somewhat puzzling.

2d. The hydronephrosis was due to the pressure of a band over the ureter; this band was doubtless the result of inflammation which occurred most likely before the removal of the ovary, or possibly was one sequel of the operation.

3d. The early age, namely, about 37 years, at which a large and fatal apoplexy occurred.

4th. The coincidence of tuberculosis in the lung, and cancer elsewhere.

DISCUSSION.

Dr. J. W. Bovee said: I see that when I operated upon this case I concluded that it was a case of cancer of the ovary, but I find on looking over my case histories, that the diagnosis I made before the operation was, that it was either a fibro-cystic tumor of the uterus or a multiple ovarian cyst. The measurements of the abdomen before the operation were: at the umbilicus, 33 inches; one inch below the umbilicus, 34½ inches; and from the ensiform cartilage to the symphysis pubis, 16½ inches. The tumor of the right ovary was bound in a vast mass of adhesions, and instead of having a clear fluid in it contained a dark brownish one, and left a surface on section looking like papillomata. The tube on the opposite side was a hydrosalpinx. Date of operation, February 1, 1894.

I saw this patient again on the 11th of May of the same year, and the abdomen at that time gave no evidence of extensive disease. I expected a recurrence of the disease, but I found none. Later she developed œdema of the arms and legs. Whether this was connected with the development of cancer in the liver and kidneys I am unable to say. As Dr. Lamb says, these cancers are of rapid growth, and it seems strange that the disease should have remained latent in these organs for 3 years if they were really secondary to the cancer in the ovary. There was some constriction of the ureter on the right side, the side of

the ovarian cyst, but if this constriction had occurred shortly after the operation, it seems to me that there would have been a larger hydronephrosis or hydroureter, and that there would have been more constriction of the ureter below.

II. PARASITES IN HEART OF DOG.

Dr. Lamb also showed the heart of a dog containing in the right ventricle the *filaria immitis*, one of the thread worms. The specimen was from New Orleans, where it is said many dogs die of this parasitic disease. The specimen is here by the courtesy of Dr. C. B. Robinson, the District Veterinarian. This worm is found mainly in the right ventricle of the heart and pulmonary artery of the dog; and in many parts of the world, especially in China and Japan. It seems to destroy the animal usually by obstructing the circulation. The usual symptoms are debility, dullness, dropsy and convulsions.

[Read at the Meeting of November 10, 1897.]

THE VALUE OF CERTAIN CHEMICAL AND MICROSCOPICAL PROCEDURES IN THE DIAGNOSIS OF CANCER OF THE STOMACH.

By Dr. George W. Johnston and Dr. Andrew Stewart.

An early diagnosis in malignant disease of the internal organs of the body, at all times desirable, is especially necessary if there be any hope of effecting relief through operative interference. The difficulties of early discovery are, however, very great, and can be overcome, if at all, only by the conscientious employment in all cases of obscure visceral disease of every diagnostic resource.

Let us consider in this paper some of the less generally utilized expedients employed (chiefly chemical and microscopical), impartially weigh their value and estimate the limits of their usefulness in the certain, and, if possible, the early recognition of gastric carcinoma.

(*A*) THE GASTRIC JUICE AND GASTRIC CONTENTS.

What methods have we of studying the gastric juice and gastric contents in health and disease ?

Of the various means proposed to enable us to satisfactorily investigate the gastric juice and stomach contents, we will mention only the so-called *test meal.*

It furnishes the stimulation necessary for the secretion of gastric juice in sufficient quantity for analytical purposes, and also supplies an index of digestive capacity, not only as regards chemical change, but the motor and absorptive power of the stomach as well.

There are many test meals employed, but the simplest and most satisfactory are those of Ewald and of Boas.

Ewald's test breakfast consists of one-third of a liter of fluid (water or weak tea without milk or sugar) and an ordinary breakfast roll weighing 35 grams. This meal is said to furnish all of the ingredients of ordinary food, viz : Albuminoids, starches, sugar, non-nitrogenous extractives and salts. It does not require to be left long in the stomach, so that an examination can be expeditiously made, and on account of its solubility, there is no mechanical obstacle in the way of the subsequent easy removal of the gastric contents.

Boas' meal is even simpler ; a table spoonful of sifted oatmeal added to a quart of water and boiled down to a pint. This, with the addition of salt and a little water, constitutes the meal.

The advantage of the test breakfast of Boas over that of Ewald is that the former contains no lactic acid, which is

found in bread, and whose presence or absence in the gastric contents is a matter of the utmost import in the diagnosis of cancer of the stomach.

The meal of Ewald or that of Boas is given in the morning, the patient having fasted since the night before. If there be much gastric stasis, the stomach may be washed out during the previous evening. After the expiration of an hour or an hour and a half, the contents of the stomach are withdrawn through an ordinary stomach tube and received in a suitable vessel. In this procedure the patient assists the siphon action of the tube by straining and bearing down (Ewald's expression method) or by coughing.

What do we learn by this method (the test meal) of the composition of the stomach contents during normal digestion ?

In the normal subject the gastric contents, ten to fifteen minutes after the ingestion of Ewald's test breakfast, are found to be acid, and this acidity is due to free acids, acid salts or both. The free acid is lactic acid, and this determines the reaction until a half or three-quarters of an hour have elapsed after the meal is taken, when, the albuminoid affinities having been saturated, traces of free HCl may be detected. Then, as the amount of free HCl, as indicated by a curve, rises, that of lactic acid falls, until at or shortly after the expiration of an hour, free HCl is present in abundance, but lactic acid has practically disappeared.

If the stomach contents in a healthy person be withdrawn one to one and one-half hours after the administration of the breakfast, the following conditions will be found :

Quantity, usually 20—50 c. c.; reaction, acid ; percentage acidity, 40—60 (0.015: 0.21 per cent HCl); free HCl, present ; pepsin and chymosin, present ; propeptone, present in small amount ; peptone, present in larger amount ; dextrin, absent ; erythrodextrin, present in small amount or absent ; achroodextrin, present ; maltose, present.

Having before us a specimen of the gastric contents from a case of supposed malignant disease of the stomach, removed, as we have described, at a proper interval after Ewald's or Boas' test breakfast, how would we proceed to analyze it, and, if there be cancer, what would be found ?

We would first wish to learn if the fluid were acid ; if so, how acid, and, finally, the cause of this acidity.

(*a*) REACTION.

By means of litmus paper we discover if the gastric contents be acid, neutral, alkaline or amphoteric. We find in cancer, as in health, that the reaction is acid. But this teaches little, for the reaction of the stomach contents is nearly always acid, and may be due to the presence of free HCl, combined HCl, acid salts, lactic acid or the fatty acids. In the healthy subject free HCl, combined HCl or acid salts will determine the reaction ; and, although these may be absent in many pathological conditions, yet their place is then taken by the organic acids and the reaction remains the same.

(*b*) PERCENTAGE ACIDITY.

The percentage acidity of a specimen of gastric contents is estimated by titrating 10 c. c. of the filtrate with a tenth-normal solution of sodium hydrate, using phenolphthalein as an indicator. The number of c. c. of the alkaline solution necessary to saturate the acid in 10 c. c. of the gastric filtrate is multiplied by 10, the result being the percentage acidity of the specimen under examination.

In gastric cancer, percentage acidity is diminished, so that, instead of requiring 40—60 c. c. of the alkaline solution to neutralize 100 c. c. of the stomach contents, as is usual in health, a far less amount is sufficient.

(*c*) FREE HCL.

There have been a number of re-agents suggested for the detection of free HCl in the gastric contents, viz: Congo red, methyl violet, resorcin, tropæolin, benzopurpurin, and others both organic and inorganic. Some of these are quite delicate, and the reactions that ensue upon their employment (generally changes in color) are striking. Unfortunately many of them suffer the same changes in the presence of an organic acid, or the reaction may be interfered with by albuminates or acid salts. Therefore, they are to be regarded rather as tests for *a* free acid than for free HCl.

There are two re-agents, however, both of extreme delicacy, that are practically free from these objections, and upon which the chief reliance is placed in the laboratory. These are the tests of Guenzberg and of Toepfer, respectively. In the former the re-agent consists of a mixture of phloroglucin (2), vanillin (1), and absolute alcohol (30); and in the latter of dimethyl-amido-azo-benzol or methyl orange. If a drop or two of these re-agents is mingled properly with an equal amount of filtered gastric contents upon a porcelain dish, a most effective and characteristic change of color is at once apparent in the presence of even the minutest trace of HCl. Gentle heat should be applied in the case of Guenzberg's test. Further, Toepfer's re-agent can be used in the quantitative estimation of free HCl, and also as a differential test to exclude combined HCl and acid salts.

If the fluid removed from a carcinomatous stomach, after either of the meals heretofore described, be analyzed by the foregoing tests, it will be found that instead of containing, as in health, a sufficient amount of free HCl to be easily detected, the re-action will be negative and free HCl therefore absent. This is a most important diagnostic feature and is quite constant, having been found by Boas in 35 out of 40 cases examined, or in 87.5 per cent. Still, it is not invariable, for the neoplasm *per se* has no effect upon the secretion of this acid; it is the accompanying catarrh of the gastric mucous membrane and its pathological consequences that diminish or wholly prevent its formation. Therefore, in the rare instances in which there is no catarrh, or early in the development of the tumor, before the integrity of the surrounding mucous membrane has suffered, the secretion of HCl will not be seriously affected. And again, as will be spoken of later, where the seat of a simple ulcer has undergone malignant degeneration, free HCl may at first be present in normal amount or even in excess. Making all due allowance, however, for anomalous cases, it may be stated that free HCl is absent in the vast majority of instances of cancer of the stomach, and its presence strongly points against the probability of the existence of such a morbid condition.

(*d*) THE FERMENTS.

Both pepsin and chymosin (rennet) and their respective zymogens are present during the progress of normal digestion.

The presence of pepsin, in a specimen of gastric juice removed by the tube, may be inferred, should the latter be found to contain free HCl. In this case 25 cc. of gastric juice will digest 0.05—0.06 gm. of coagulated egg albumen in three hours if kept at a temperature of 37–40 degrees C. But if there be no

pepsin, as is indicated by the absence of free HCl, the fluid may still contain its proenzyme. Under these circumstances to the secretion which has previously failed to digest, enough HCl is added to enable us, by means of the appropriate tests, to recognize free acid. The zymogen, if present, is thus converted into the physiologically active ferment, and under the same conditions as above, the egg albumen is successfully digested.

A small quantity of gastric juice, if it contain chymosin, will rapidly coagulate a relatively large amount of milk, if kept at the proper temperature. In the absence of the enzyme, the addition of a weak solution of a soluble lime salt ($CaCl_2$) will, in the presence of the zymogen, convert the latter into the former, and at the proper temperature coagulation of casein will soon take place.

The determination of the presence or absence of the ferments and their zymogens is not of so great importance in the diagnosis of cancer of the stomach, as is that of free HCl and lactic acid. But still it should not be neglected; for in the event of finding pepsinogen and chymosinogen in the gastric contents, we may be reasonably certain that there is no organic disease of the stomach, but that we have to deal with some temporary circulatory disturbance of this organ, or with one of those perplexing neuroses that so often confuse the diagnostician.

(*e*) LACTIC ACID.

One hour, then, in cancer of the stomach, after taking the test meal, no free HCl can be found, though the gastric contents are still acid. The cause for this reaction must, therefore, lie either in some acid introduced from without or developed, as the result of fermentation, within. By employing Boas' test breakfast we introduce no acid with the food. Therefore, if the gastric juice be found acid one to one and one-half hours after its ingestion, this reaction, in the absence of HCl, can only be due to acids developed within the stomach. These are lactic and the fatty or volatile acids.

Two color tests, either Uffelmann's or Kelling's, may be employed in the detection of lactic acid in the gastric contents. Uffelmann's reagent, consisting of a combination of a solution of sesquichloride of iron and of carbolic acid, is of an amethyst blue color; this is changed to canary yellow in the presence of minute traces of lactic acid. Kelling's test, in which sesquichloride of iron alone is employed, and where in the presence of lactic acid a distinct green color appears, is considered more reliable than that of Uffelmann.

In cases of cancer of the stomach, after Boas' test breakfast administered with the proper care, lactic acid in large amount is found in the gastric contents. Thus, Boas found quantities ranging from 1.22 to 3.82 p. m. in 13 out of 14 cases examined. We do not know why lactic acid should be present in such large amounts in this affection. It cannot be due alone to the fact that pyloric stenosis with dilatation promotes stasis and fermentative changes in the ingesta, since it is found in instances without obstruction at the pylorus or dilatation; and in cases of benign stenosis with dilatation it is absent. This will be spoken of later, but is of little importance. What *is* of vital interest for us to know is that lactic acid is found in nearly every case of cancer of the stomach, is present in large quantities, and, what is of still more import, can be discovered early in the disease. Further than this, as will be shown later on, it is claimed by some of the most experienced diagnosticians in this particular branch of medicine, that lactic acid is not found in any other disease of the stomach after

Boas' test breakfast, the precaution having been taken to wash out the stomach the night before. Even those who urge the contrary admit that such is rare, and the proportion of this acid never elsewhere equals that found in cancer of the stomach. Simon, in the second edition of his work, which has just appeared, says: " * * * it may be safely stated that the presence of large amounts of lactic acid will almost invariably justify the diagnosis of carcinoma of the stomach, and, according to the writer's experience, Boas' test is at least as important as Widal's serum test for typhoid fever."

(*f*) THE FATTY ACIDS.

The fatty or volatile acids, butyric and acetic acid, are not found in normal gastric juice, but are present in considerable amounts in the gastric contents of individuals suffering from carcinoma of the stomach. If in large quantity they may be recognized by their characteristic odor. Otherwise, an ethereal extract of a suspected specimen of stomach contents is made, the ether evaporated off, and a small quantity of distilled water is added to the residue. If to one portion of this fluid a trace of calcium chloride is added, small oil-like droplets will separate out, which give off the typical odor of butyric acid; or barium butyrate may be produced by the addition of a little baryta water. The other portion may be neutralized with sodium hydrate and a few drops of a neutral chloride of iron solution added; a beautiful red color develops in the presence of acetic acid, and on boiling a red precipitate is thrown down.

(*B*) VOMITED MATERIAL.

1. How frequent is vomiting in cancer of the stomach; of what value in diagnosis is an analysis of the vomitus?

Vomiting is very frequent in cancer of the stomach, occurring at some time during the progress of the disease in nearly 90 per cent of those who suffer from this malady. Under favorable conditions the composition of the vomited material so closely resembles that of the gastric contents removed after a test meal, that, by employing the usual reagents, the reactions already described are obtained without difficulty. But in many cases chemical examination of vomited material is very unsatisfactory, and the reactions will be masked or their value minimized by the character of the ingesta and by the decompositions that have taken place during the long retention of food in the stomach.

With the naked eye, microscopically or chemically, we may find a large variety of substances in the vomit, viz: Mucus, bile, intestinal juice, leucocytes, epithelial cells, food detritus, blood, tumor particles or cells and micro-organisms. Only the last three are of any importance and of them only will we speak.

2. How is blood recognized in vomitus?

Hæmatemesis occurs in about one-third of those who suffer from gastric carcinoma. The blood appears in many forms in the vomit. Usually the hemorrhage has not been great and the blood has lain so long in the stomach that it has lost its usual look and has assumed the well-known coffee-grounds appearance.

Under these circumstances the red blood corpuscles have been destroyed, nothing but pigment masses remain, and we often require some special means to make us quite sure that what we have before us is blood at all. To determine this fact the spectroscope may be employed, or one or more of the following tests: Weber's, Heller's, Schoenbein-Almen's, Korczynski's and Jaworski's or

Teichmann's. Personally, we prefer the last, which has also proven of such great utility in medico-legal examinations. It is carried out as follows: A small quantity of normal salt solution is evaporated gently on a glass slide. Upon this a teazed fragment of the coffee-ground sediment is placed, a cover slip laid over the whole, and a little acetic acid allowed to run between the glass slide and cover slip. Moderate heat is applied for a few moments, fresh portions of acetic acid being added as the fluid bubbles, until a reddish-brown coloration is seen. The slide is then allowed to cool, a drop of glycerine permitted to flow between the cover slip and slide, and the specimen examined under the microscope. In the presence of the merest traces of blood, one sees the characteristic crystals of hæmin—Teichmann's crystals.

3. What is the value in diagnosis of tumor particles, specific tissue elements or cancer cells in vomited material ?

One of the most frequent examinations that one is called upon to make in the laboratory is to determine if a given fluid (vomitus, urine, etc.) contain cancer cells. The popular idea that characteristic elements of morbid tissue may be found and recognized in vomited material is not supported by Ewald, an authority, as we know, upon all that concerns the stomach and its diseases. "Is it possible," says he, "to recognize specific cancerous tissue ? This is certainly impossible with isolated epithelial cells. It must be admitted with great regret that, in spite of all the time and labor which have been expended, no means have yet been discovered by which we can distinguish specific cancer cells from the ordinary varieties of epithelial cells found in the stomach contents, some of which are derived from the walls of that viscus, while others from the mouth and esophagus have been swallowed. For my part, I only consider conclusive the concentrically stratified aggregations of cells, true cancer cell nests. * * * But danger of error arises," he continues, "when small pieces of gastric mucosa are detached. The pressure of the cover glass on such a piece causes the epithelium surrounding an excretory duct to assume a concentric stratification resembling a cancerous cell nest." Cf. Osler on cancer cells in the urine; also von Jaksch.

4. Are there any micro-organisms found in the vomitus that are peculiar to cancer of the stomach ?

Various micro-organisms are found in the gastric contents in cases of cancer of the stomach, but none of them requires especial mention except the so-called Oppler-Boas bacillus, to which attention has very recently been directed. This micro-organism seems to be quite distinctive of carcinomatous disease in this location, in that it is almost uniformly present in cancer and absent in other diseases of the stomach. It is thought that this bacillus is responsible for the development of lactic acid, whose presence in the affection under consideration is so constant and characteristic.

(*C*) THE MOTOR AND ABSORPTIVE POWER OF THE STOMACH.

How are they investigated and how are they influenced by a malignant neoplasm in the stomach ?

The motor and absorptive functions of the stomach may be interfered with by pyloric stenosis or insufficiency, by extensive malignant infiltration of the stomach wall, or by secondary inflammatory and atrophic changes in the gastric mucosa. Though less important than the information obtained as to the chemistry of digestion through some of the previous methods of examination, a knowledge of the motor and absorptive

capacity of the stomach is not without value in the diagnosis of malignant disease of that organ.

1. MOTOR POWER OF THE STOMACH.

If the stomach be found empty 6 to 7 hours after a heavy meal, or 1½ to 3 hours after Ewald's test breakfast, it is evident that peristalsis has been sufficiently active, and that the food has passed out of the stomach into the intestine in the proper time. Information upon this point may be gained in another way and without the necessity of introducing the stomach tube. One gram of salol is administered soon after a light meal, the bladder being emptied at the same time the drug is taken. In acid solutions salol is not decomposed, so that it is not until it passes out of the stomach that it is broken up into its components, phenol and salicylic acid. The latter is then absorbed in the intestine and eliminated by the kidney as salicyluric acid, which is recognized in the urine by a simple color test. Every half hour after the exhibition of the salol a little urine is passed, and if gastric peristalsis be normal, salicyluric acid should be detected at the second examination, *i. e.*, in one hour after the drug is given. It has been found, however, that sometimes, even in healthy persons, a considerable period elapses before the appearance of salicyluric acid. Therefore, it has been suggested that the urine be passed at longer intervals, and the time of the disappearance of salicyluric acid be noted. In normal subjects, it is found that, after 24 hours, this acid can no longer be discovered in the urine; a proof of course that the salol has long ago passed out of the stomach and has been eliminated from the body. In certain diseased conditions of the stomach, salicyluric acid has been recognized 48 hours or more after taking the dose of salol.

Much light is thrown upon the existence of a pyloric stenosis by this test

2. THE ABSORPTIVE POWER OF THE STOMACH.

If the absorptive power of the stomach be normal, iodine will appear in the saliva in from 8 to 15 minutes after 1 to 2 decigrams of potassium iodide in a gelatine capsule have been given by the mouth. Or, the urine will turn red on the addition of liquor potassæ, 15 minutes after 2 decigrams of powdered rhubarb have been ingested.

(*D*) THE URINE AND FECES.

In the urine the chlorides may be diminished and occasionally there is peptonuria, but nothing is found to aid diagnosis.

It should not be forgotten that, if the hemorrhage in cancer of the stomach be small in amount, the blood will not be vomited, but will pass into the intestines; where it is very likely to remain undiscovered, even if the evacuations are examined microscopically. With one of the blood tests already described its demonstration is, however, a matter of no great difficulty, and Ewald has suggested that the feces be thus investigated in every case of obscure disease of the gastro-intestinal system.

(*E*) SUMMARY OF THE CONDITIONS FOUND IN CANCER OF THE STOMACH.

In cancer of the stomach we find, upon chemical and microscopical examination, the following conditions: They vary somewhat, as has been described, according to the stage of progress the disease has reached, but are all quite constant, and some of them are to be met with early in the affection.

1. The chemistry of the gastric contents removed after Boas' test breakfast: (*a*) reaction acid; (*b*) total acidity diminished; (*c*) ferments diminished, frequently absent; (*d*) free HCl dimin-

ished or absent; (*e*) lactic acid, large quantity; (*f*) fatty acids, large quantity.

2. The character of vomited material: (*a*) blood frequently present; (*b*) specific tissue elements may be present; (*c*) the Oppler-Boas bacillus present.

3. The motor and absorptive power of the stomach may be diminished.

4. The urine and feces usually show nothing, though the latter may contain blood.

(*F*) CONCLUSION.

We have, we believe, in the foregoing remarks established the fact that certain conditions that are recognized by chemical and microscopical procedures are met with quite constantly in cancer of the stomach—especially in the gastric contents removed after a test meal and the vomited material—and these conditions, singly or together, are quite distinctive of this affection, and in some instances are met with early in its history. But we wish to make it very clear that the methods of examination that have been described, however valuable their results, are not to be employed to the exclusion of, but in conjunction with, other diagnostic expedients, for, as Ewald says: "Only the most careful and thorough consideration and weighing of all the symptoms which can be obtained, with all the diagnostic resources, will enable us to recognize the existing disease."

(*G*) THE CONDITION OF THE BLOOD IN CANCER OF THE STOMACH.

1. The condition of the blood in malignant disease varies considerably with the situation of the tumor and the rapidity and stage of its development. In the main, we find in the blood of patients with cancer or sarcoma, simply the characteristics of an ordinary secondary anemia; and, as a rule, the alterations are not so pronounced in the presence of a hard, slow-growing tumor, occupying a position unfavorable for the formation of metastatic deposits, as in those softer, more vascular, swiftly developing and fulminating forms, often met with in the interior of the organism.

But what is the cause of this anemia; to what is it secondary? Hemorrhage increases it, but is not essential to its production; for the gravest forms of anemia may be encountered in persons who have never lost an ounce of blood, and in whom there has been no suppuration, nor implication of the blood-producing tissues, nor interference with the ingestion, digestion and assimilation of food. For lack of some better explanation, we may assume, following the experimental results obtained by Grawitz and others, that toxic products pass from the tumor into the blood stream, affect the integrity of the red corpuscles, and at the same time so disturb the balance between the fluids within and those without the vessels, as to lead to an increase of the watery elements and consequent dilution of the blood. At any rate we know that in cancer we have anemia, and that the same impoverishment of the blood may be caused in animals by the injection of cancerous extracts. If we remove the tumor in man, or stop the injections in animals, the blood regains its normal constitution.

In malignant disease the hemoglobin first begins to suffer, the percentage, as measured by the von Fleischl instrument, steadily declining with the progress of the affection. Then the red cells show evidences of degenerative change. The corpuscles vary in size and some of them are pallid; or they are altered in form, exhibit necrotic changes in their structure or possess unusual affiliations for stains. Next they decrease in number, the color index (or amount of Hb. per corpuscle), however, remaining below

normal. Finally nucleated red blood cells appear in the peripheral circulation, the smaller forms predominating.

The same causes which tend to decrease the number of red cells, lead to an increase in the number of leucocytes. In rapidly-developing tumors, or those of large size, accompanied by hemorrhage, metastatic deposits and great impairment in general health, the red cells reach the minimum, the leucocytes the maximum ; and this increase is made up by a gain in the so-called adult, at the expense of the young forms. Thus the polymorphonuclear or adult leucocytes, which make up in the healthy individual from 60 to 80 per cent of the total number of colorless corpuscles in the peripheral circulation, may reach 85, 90, 95, 98 or perhaps even higher percentages.

2. Are there any alterations in the blood peculiar to cancer of the stomach as distinguished from cancer in general ?

In the main, the same condition of the blood is found in cancer of the stomach as in cancer of any other organ or tissue. Since the scirrhus is the type present in about 75 per cent of all cases in this region, we would usually not expect any very grave changes in the blood until the disease was well advanced or complications have occurred. Hence, leucocytosis, which in this affection is an evidence of the degree of malignity, is encountered in not more than one-third of the cases, unless hemorrhage, perforation or metastasis have supervened.

Another point to be noted is that the physiological leucocytosis of digestion (as distinguished from the pathologic leucocytosis of cancer) is absent in most cases of malignant disease of the stomach, and this cannot be attributed to a lack of HCl in the gastric juice, since it is observed where this acid is present.

In addition to these features of the blood in cancer of the stomach there is yet another to be alluded to, which, however, is dependent upon a purely mechanical cause. If the tumor produce stenosis of the cardiac orifice of the stomach, the passage of food and drink into the stomach is prevented, and relative or actual starvation results. In consequence the proportionate number of colorless corpuscles is normal or below, and the actual impoverishment of the blood is masked by a high degree of concentration, the percentage of Hb. and the number of red corpuscles per cb. mm. being as great or greater than is usual in health. The same condition obtains in fasting from whatever cause, and hence, of course, in stricture of the esophagus.

3. Are there any alterations of the blood peculiar to cancer of the stomach as distinguished from other diseases of the stomach ?

It is with regret that we have to confess that so little study has been devoted to the condition of the blood in diseases of the stomach other than cancer, that this question cannot be answered with entire satisfaction.

Anemia is common to all gastric diseases in which digestion and assimilation are interfered with, hemorrhages occur or morbid products are absorbed, and may be masked by profuse or repeated vomiting. Leucocytosis, infrequent in cancer, is absent in ulcer, and in chronic gastritis there may be actual diminution in the number of the white blood corpuscles. The physiological leucocytosis of digestion is present in ulcer, slight or delayed, in chronic gastritis and absent in cancer.

This is as far as we can go at present, but nevertheless it will be seen that the distinction between cancer and ulcer, perhaps the two diseases of the stomach

most often confused, is quite sharply drawn.

As has been remarked, the condition of the blood in malignant disease, except for a few accidental modifications (as in carcinomatous stricture of the esophagus), is practically the same wherever the seat of the neoplasm may be. Its distinctive features are anemia with a proportionately smaller reduction in the number of red cells than in the amount of Hb., which becomes grave and is accompanied by an increase in the number of colorless corpuscles when the disease is of a specially malignant type, when complications arise or at the time of approaching dissolution, and a relative augmentation in the polymorphonuclear or so-called adult, and a relative diminution in the mononuclear or young leucocytes. The last accompanies leucocytosis, but in the absence of an absolute increase in the white cells in the peripheral circulation the tendency toward a leucocytosis is prefigured by the disproportion between the mature and immature corpuscles and the relative increase in the former.

Now, it would seem as if the leucocytes represented and reflected the organism in its totality, being born, passing through youth to adult life with all its activities and struggles, and finally yielding to old age, decay and death. In children it is the infantile type of cell—the small mononuclear—that predominates. As the body grows in strength and stature the proportionate increase of the mature or adult cells typifies the progressive development and acquired vigor of the organism. Consequently, in manhood the relative number of adult cells is high, and that of the young and undeveloped cells is low. But in healthy maturity in the normal subject there are degrees of strength, vitality and power of resistance; though each were in perfect health, there is surely a difference in these respects between the powerful athlete and the delicately molded woman. Therefore, the leucocytes which represent, in miniature, not only the maturity of the healthy organism, but its degree of vigor, show in a series of individuals entirely free from disease wide variations which correspond with the robustness or delicacy of the organism. To include all these extreme but physiological variations, we say that in the normal adult the polymorphonuclear or mature cells comprise from 60 to 80 per cent and the small mononuclear or immature from 15 to 30 per cent of all the leucocytes present in the circulating blood. But such wide latitude may be a source of error, so that in investigating the deviations present in disease, we are compelled to specialize each individual, and fix within the limits just mentioned, a normal for him, based either upon an examination of his blood made in health, or upon what experience has taught us is usually found in the type of manhood he represents.

As a rule, we may say that the larger the frame and the more robust the health the greater number of leucocytes will there be in the circulating blood, the more actively will they respond to physiological stimulation and the higher will be the relative percentage of adult and the lower the relative percentage of young cells.

In those of extremely delicate fiber who occupy the debatable land between health and illness, in the exhaustion that follows many acute affections, in the prostration of neurasthenia and in the debility of many chronic constitutional maladies (as for example syphilis and tuberculosis), the leucocytes in the peripheral circulation show a tendency to revert to the infantile type. Again the leucocytes mirror the condition

of the organism, and while the percentage of full-grown cells is below, the percentage of those which are stunted, immature and incapable of reaching full development is above the limits met with in health.

Now, there are many cases of syphilis and tuberculosis that present signs and symptoms closely analogous to those of cancer (and taken altogether there are few diseases with which, in diagnosis, cancer is so likely to be confused). In the progress of an obscure chronic illness of uncertain origin, a tumor develops. Is this tumor tubercular, syphilitic or cancerous? In each of these conditions there is an anemia more or less grave; so much they have in common. But there appears to be one distinctive feature, so far as the blood is concerned, that at once separates malignant disease on the one hand from syphilis and tuberculosis, if the infection be unmixed, on the other. In tubercular and syphilitic affections, probably because the plasma is not of a sufficiently nutritive quality, the growth and development of the leucocytes is retarded, and we have a large proportion of immature and a small proportion of mature forms. In cancer we would expect the same, but actually see just the reverse. And, what is more remarkable, so far as the relative proportion of the young and full-grown leucocytes is concerned, the conditions that obtain in carcinomatous affections are practically identical with those observed in health, and the more malignant the neoplasm and the greater the general physical deterioration, the more exaggerated is the tendency of the adult cells to approach, equal or surpass the limits which are seldom or never attained in the most florid and robust constitution. And it is this peculiarity we must consider when, in diagnosis, we wish to separate cancer, not from all diseases, but from those affections with which it is often confounded.

We have arranged in the form of a chart the results of a differential count of the polymorphonuclear and small mononuclear leucocytes in eleven cases of malignant disease in which we have examined the blood. This comprises all of such cases investigated by us with one exception. Some of these patients were sent to us in the ordinary routine of practice; others we were given an opportunity to examine by friends who knew we were interested in this subject, and, often at considerable inconvenience, placed their cases at our disposal. We wish to thank these gentlemen and also those who gave us opportunities of which, at the time, we could not avail ourselves.

In this chart the heavy black lines running transversely across the sheet indicate, the lower, the normal average percentage of small mononuclear, the upper, the normal average percentage of polymorphonuclear leucocytes. The black dots, which for the sake of better demonstration have been connected by straight lines, show, in the lower, the percentage of small mononuclear cells, and in the upper series, the percentage of polymorphonuclear cells in the eleven cases of malignant disease examined. It will be seen at a glance that in nine out of the eleven cases the small mononuclears were below the average, and the polymorphonuclears above the average normal percentage. For purposes of contrast we have introduced in the same chart two series of red dots and lines which picture the percentages of adult and young leucocytes in eleven cases of neurasthenia in which the blood was studied by us. Neurasthenia could, of course, in no way be confused clinically with cancer; but the condition of the blood in neurasthenia is like that which is found in certain chronic affections

elsewhere referred to, that do present a clinical picture somewhat similar to malignant disease.

It will be observed that the red and black lines bear entirely different relations to the transverse normal lines. For, while in nine out of eleven cases of cancer, the percentage of adult cells was above the average, in nine out of eleven cases of neurasthenia, it was below the average, and a like difference is to be seen in the percentage of young cells in the two diseases.

The eleven cases of malignant disease are, in detail, as follows:

1. Mr. M., Drs. Nevitt and W. W. Johnston, sarcoma of the neck, dead.

2. Miss K. (already reported to this Society by Dr. Kerr), sarcoma of kidney, operation, recovery, subsequent fate unknown.

3. Mr. J., Johns Hopkins Hospital, cancer of the stomach, dead.

4. Mr. T., Drs. Dillenback, W. W. Johnston, cancer of esophagus, gastric fistula made by Dr. Finney, of Baltimore, subsequent death, autopsy.

5. Mr. W., Drs. Crook and W. W. Johnston, retroperitoneal cancer, exploratory operation by Dr. I. S. Stone, recovery from operation, present condition hopeless.

6. Mr. B., Dr. W. W. Johnston, cancer of liver, dead.

7. Mr. O'B., Drs. Barrie and W. W. Johnston, cancer of rectum, dead.

8. Mrs. C., Drs. Fry and W. W. Johnston, cancer of breast, uterus and adnexa, inoperable, dead.

9. Mrs. M., Drs. Prentiss, W. W. Johnston, Halsted of Baltimore, cancer of rectum, inoperable.

10. Mr. E., Dr. Balloch. A diagnosis of cancer of the stomach was made by competent authority in Chicago more than two years ago. Subsequent history and present condition of the patient not altogether favorable to the correctness of this diagnosis.

11. N. F., negress (all the other patients were whites), Garfield Hospital, case of Dr. Fry's, malignant disease of uterus, radical operation impossible, present condition unknown.

It is interesting to note that of the two instances of supposed malignant disease examined and included in the chart that did not conform to what is usually found in this affection, one was a case where the diagnosis was doubtful and the other was of a race whose blood conditions have never been thoroughly investigated.

Finally, although the five forms of leucocytes may be recognized and differentiated with the greatest ease and accuracy in a stained specimen of blood, and although the relative proportions that we have described are met with so frequently in cancer as to be quite characteristic, and are not encountered in certain other affections that simulate carcinomatous disease quite closely; yet the condition of the blood is influenced by too many factors of whose nature and mode of operation we know next to nothing, to warrant us in making, or even attempting to make, a positive diagnosis of cancer upon the strength alone of the number or proportion of a few blood corpuscles. We wish to take this opportunity to state most emphatically that we do not believe it possible to make a diagnosis in this affection by an examination of the blood alone; but, on the contrary, desire to make it quite clear that, neither in this or in any other respect is it our aim to unduly laud the results of laboratory investigation in the diagnosis of disease; and this paper has signally failed in its object if any such impression has been conveyed. In it we have attempted to show, taking cancer of the stomach as a text, solely that for the rec-

ognition of the nature of obscure visceral disease, especially when carcinoma is suspected, no diagnostic expedient should be left untried, and that among the means at our disposal, the resources of chemistry and microscopy are not the least important.

Dr. F. P. Vale said: In 1879 Von den Velden called attention to the absence of hydrochloric acid in the gastric secretions in cancer of that organ, which he regarded as pathognomonic. We now know, however, that this acid is likewise absent in the later stages of chronic gastritis and also in various neuroses where no lesion can be demonstrated. We also know that hydrochloric acid may be present in normal quantities and even above normal, in cancer.

In 1893 Boas called attention to, or rather emphasized, the fact already known, that in cancer of the stomach the gastric secretions gave a very marked reaction to Uffleman's test for lactic acid and further demonstrated that lactic acid, which had heretofore been regarded as physiologically present in the early stage of stomach digestion, was never normally present unless introduced with the food. When found after a test meal containing no lactic acid it was indicative of cancer. In fact he regarded its presence under the circumstances as pathognomonic. But this sign has also failed to prove all that was hoped.

Strauss, Klemperer and others regard it as the result of pyloric obstruction from whatsoever cause. It is found in the greater number of cases of cancer of the stomach, and all agree that it is found here more constantly than in any other gastric affection, and when constantly found, care being taken that no lactic acid containing ingesta be administered, the presence of lactic acid is very significant.

With regard to the bacillus of Kauffman we know too little to judge of its significance. It is known to cause lactic acid fermentation in suitable media.

There is nearly always present in cancer a leucocytosis, but there is nothing to distinguish it from other pathological leucocytoses. The evidences of secondary anemia are of course in no way diagnostic of cancer.

Stress is often laid on the absence of the ordinary physiological leucocytosis after meals, but this is also noted in other gastric affections.

Dr. Franz A. R. Jung said: Dr. Johnston has stated that none of the different single tests has a pathognomonic value in itself, and I fully agree with him. The greatest progress in the diagnosis and treatment of stomach diseases has been made since we apply proper methods of examination and since we no longer depend upon the subjective symptoms and complaints of the patient alone. It has been demonstrated that 25 per cent of cases of cancer show an absence of lactic acid, while it is present in catarrhal conditions or dilatations. This fact diminishes the value of the lactic acid test considerably. In the American Journal of the Medical Sciences, June number, 1897, Pepper publishes several cases with large quantities of lactic acid, one of which was a non-malignant dilatation.

Since we know more about the atrophy of the mucous membrane and the so-called achylia gastrica more cases of anacidity are found without the presence of cancer. For about six months I have been observing a case whose first analysis showed an acidity of only 7 KOH, no Phlorug. Vanill. reaction, no lactic acid, no propepton, no pepton, no rennet, achroodextrin positive and rennet-zymogen present. The patient had lost considerable in weight at the time of his first visit, and because he had two lumps in his abdomen was very much afraid of cancer. The most careful examination has convinced me that these lumps were caused by intense peristalsis. Repeated analyses have shown me that proper treatment has benefited the patient, who gained 12 pounds, is able to do his work, has now an acidity of 27, has pepton and propepton, but free HCl never appeared, and the peristaltic lumps as a result of the intestinal digestion never disappeared.

Similar cases are reported by Einhorn, of New York. He and Klemperer, Rosenhain and Thayer have published

cases of non-malignant gastric trouble in which lactic acid was found in the gastric juice. Einhorn believes that severe forms of gastric catarrh and especially achylia gastrica will undoubtedly furnish a greater contingent of cases with absence of HCl than cancer of the stomach itself.

It is Einhorn's opinion that a diagnosis of cancer of the stomach can be positively made under the following conditions :

1. If particles of tumor in the wash water or tube reveal the characteristic picture of a malignant growth.
2. The presence of a tumor.
3. Tumor associated with frequent hæmatemesis.
4. Constant pains, frequent vomiting, ischochymia, emaciation, all these symptoms being quite permanent, and not extending over too long a period of time (six months to one year).
5. Tumor and ischochymia.
6. Emaciation, ischochymia, presence of lactic acid.
7. Constant anorexia and pains not yielding to treatment, accompanied by frequent small hemorrhages of coffee-ground color.

The value of all these new investigations lies in the fact that they have given us the opportunity of gaining an objective opinion and to apply a number of tests and cross-tests, which was not possible in earlier days. The test for free HCl is made easily by means of phloruglucin vanillin, or tropäolin or methyl blue or resorcin. It is proportionately easy to ascertain whether the claimed sour taste of the patient orginates in an increased amount of HCl, or if decomposition produces organic acids, or perhaps normal acidity is found in the stomach with increased sensitiveness, or possibly with others of the numerous nervous affections. In this way we are enabled to avoid the old mistake of treating every case of acidity alike, and we can differentiate between gastritis chronica anacida, acida, mucosa and atrophicans, and regulate the treatment accordingly. After the presence of free HCl has been ascertained, the practitioner possibly is not always able to determine the total acidity with a deci-normal solution of KOH. If, however, he should be willing to do this he will have a very important key in his hand. Besides the phloruglucin test it would be advisable to make the coarse lactic acid test. Numerous controversies have arisen through the inability to recognize the correct color of the Uffelmann test. I have found the following method very useful: Ten cubic centimeters of filtered gastric juice are well shaken with twice the quantity of ether. After this, the ether is separated. Half the quantity is taken, and some drops of a solution of ferri sesquichl. are added. This iron solution ought to be so weak that it only shows the faintest yellow color. If lactic acid is present in the ether mixture, a clear canary-yellow or lemon-yellow color appears. Evaporate now the other quantity of ether, add to the remainder two drops of distilled water and some drops of the iron solution, the same canary color will appear. The importance of the ethereal extract is that the difficulty in the recognition of the canary-yellow color is greatly diminished. Since the gastric juice is usually of a yellow or light brown color, it is absolutely necessary to shake it with ether. The ethereal extract is colorless. There can be no dispute about the required color of the test when the examiner has made a cross-test with a weak lactic acid solution.

The aldehyde test for lactic acid of Boas is too complicated for the practitioner, and certainly does not give better results than the Uffelmann test. Dr. Jung then presented the histories of five cases of cancer or suspected malignant disease which had come under his observation.

Dr. E. B. Behrend said : With reference to the presence of lactic acid in gastric carcinoma, I am convinced that it is not specific or pathognomonic for this disease. Able investigators, as Strauss, Rosenheim, Oppler and Von Jaksch have shown that its occurrence is due chiefly to three factors: First, stagnation of stomach contents ; second, absence of free hydrochloric acid; third, presence of bacteria, which produce the lactic acid as a part of their life activity. I call to mind a case of cancer of the stomach with stenosis of the pylorus,

which gave an exquisite lactic acid reaction with total absence of hydrochloric acid. The operation of gastro-enterostomy was performed in order to allow of the entrance of the stomach contents into the duodenum. The operation was successful, and an examination three months afterward showed absence of free and combined HCl as before, but *no* lactic acid. In this case, at least, it would appear that the stagnation stood in a causal relation to the presence of lactic acid. As there are furthermore non-malignant diseases of the stomach, which cause total absence of free hydrochloric acid and stagnation (inveterate ulcer of pyloric orifice with subsequent atrophic catarrh), and in these cases lactic acid has been found in considerable quantities, its value in differential diagnosis is lessened.

In carcinomatous growths, which affect the walls of the stomach without attacking the orifices we may and frequently do have unimpaired mobility, and as a consequence of this the stomach contents do not remain long enough to permit of the production of lactic acid fermentation. I might mention here a test of some value in the diagnosis of such cases. If we set up a fermentation tube containing the filtrate of a test breakfast (Ewald's) from a normal stomach, very little or no gas is produced at the end of twenty-four hours. In gastric cancer however, such a filtrate would show an abundant gas production. The reason for this difference is due, no doubt, to the following facts: In the normal state the walls of the stomach are elastic and comparatively smooth, and offer no chance for the lodgment of bacteria. In cancer, however, we have the walls converted into a stiff, unyielding, board-like mass of irregular surface, containing depressions which are never straightened and cleaned out, and which afford convenient receptacles for the retention of micro-organisms of all sorts. I remember one case in which this reaction was relied upon in making a diagnosis of cancer, which was afterwards located in the anterior wall by the diaphanoscope and X rays. The reason why lactic acid is found so frequently in carcinoma is due to the fact that the majority of pyloric stenoses are due to this disease, and that the majority of carcinomas have their origin at the pyloric end. The entire lactic acid question bears with special emphasis on pyloric cancers as opposed to cancers in other portions of the stomach walls. I should like to emphasize the importance of the presence of pus, blood, sarcinæ, involuntary muscle fiber, etc., in the wash water. Care must be exercised in drawing deductions from fragments of tissue torn away in passing the stomach tube. The method of examining such shreds under the microscope by placing over them a cover slip on a glass slide is quite untrustworthy, as it disturbs the relations of the various elements to each other. I much prefer to fix and harden them after the manner employed in ordinary pathological work. Then again it may happen that the shreds of tissue examined may come from a part of the stomach which is perfectly normal, and an attempt to draw a conclusion from this as to the condition of the entire stomach wall would be misleading.

The value of the blood examination in carcinoma as a means of differentiating it from syphilis and tuberculosis may be of some value in other organs of the body; but in my opinion it need not be considered (practically speaking) in the diagnosis of stomach diseases, for tuberculosis and syphilis rarely, if ever, affect this organ; such at least has been my experience extending over a thousand post mortems.

Dr. George W. Johnston, in closing the discussion, said: One or two of the speakers have called attention to the presence of lactic acid and the absence of hydro-chloric acid in cancer of the stomach, as having been determined by recent investigations. In this connection it is interesting to note that 55 years ago (1842) Golding Bird examined the vomit of a patient with pyloric cancer, and, to use his own words, found that "during the more irritable stage of the disease free HCl is present in the vomit in considerable quantities, but it gradually diminishes in proportion to the patient's loss of strength, and that the organic acids increase proportionately as the free HCl diminishes." He performed a few

control experiments, but for some reason soon abandoned his investigations. The whole matter was forgotten, and was not until very recently revived with new methods. Lately, another test for lactic acid has been proposed with gentian violet and a solution of chloride of iron, which is said to be a very delicate test.

We attempted to limit ourselves to the simpler tests in the paper, and we also wished to be extremely conservative in what we said about the condition of the blood in cancer of the stomach. We think, from the opinions of eminent authorities and our own experience, that the tests mentioned are of value as aids in the diagnosis.

So far as tumor particles are concerned, we said that we would not place any dependence upon them alone, and we feel that this is a safe rule to follow.

Dr. George M. Kober said: I wish to express my gratification that there are a number of men in this city who are competent to conduct the various examinations, chemical, microscopical and bacteriological, which are so essential as aids in the diagnosis of obscure cases, and I hope that these gentlemen will be called into consultation whenever it may be desirable instead of sending, as is frequently done, to great distances or to Government laboratories to have the examinations made.

At 9.50 o'clock the Society adjourned.

THE MILITARY SURGEON

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THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

BY JAMES E. PILCHER, M. D., U. S. A.

Military surgery may fairly claim to be the oldest branch of the surgical art. The first surgeons were military surgeons, and their first work was the alleviation of injuries inflicted upon one another by our preposterous progenitors in their equally preposterous passages at arms. If the first military surgeons had not the readiness of a Rush nor the learning of a Letterman, it was nevertheless true that they possessed more of both of these qualifications than any of their contemporaries. For the military authorities of early days, with that cheerful disregard of the rights of others so characteristic of primeval and mediæval man, were wont to appropriate surgical skill in the same genial manner with which they were accustomed to extract the sluggish shekel from the unconsenting Israelite or the tardy tribute from the equally unwilling serfs, who formed the greater part of the population—paying all in wounds and honor, much of the former and little of the latter; not a very valuable currency in these days, but not to be despised in times when the only alternative was death without honor.

In the entire history of the world down to the present time, we find military surgery in the van. The works of the great surgical authorities of each successive age, basing their opinions upon personal experience gained in war, were no less than treatises upon military surgery with other surgical matter added incidentally. In this century alone, with its long intervals of peace, its tremendous strides in pathology and its magnificent achievements in practice, has civil surgery forged up to the same plane with its older brother, and assumed the more conspicuous position in the public estimation.

During these long decades of military inaction, however, in our own country two little bodies of men have continued in tireless labor upon the maintenance of the high standard of military surgical efficiency. The medical corps of the Army and Navy have preserved the quality of their *personnel* by admitting candidates only after a searching examination has demonstrated their complete preparation for the work in which they were to be engaged. With the practical experience contributed by a quarter of a

century of practically continuous Indian warfare, and the theoretical knowledge acquired by constant professional study, the efficiency of the national forces has been readily kept at a high standard.

But the Army and Navy of the United States in peace are but a center to which in case of war may be attracted the citizen soldiery. Under the varying name of militia, National Guard, State Troops and State Guard—the two latter being the more correct, although the least popular designations—the military spirit has, since the War of the Rebellion, been kept alive in many of our States; in not a few cases, these troops have been brought to a high degree of military efficiency and have rendered most important military services.

Recognizing the necessity for uniform methods of surgical work among these forces, if the highest degree of serviceability were to be maintained, in 1891, under the direction of Dr. Nicholas Senn, the distinguished Chicago surgeon, then Surgeon General of the Wisconsin National Guard, an Association of Military Surgeons of the National Guard of the United States was organized. This body had a most successful career until 1893, when it was determined to invite the medical officers of the Army, Navy and Marine Hospital Service to membership; the constitution was accordingly amended to drop the words, "of the National Guard," from the name of the Society, and it became the ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES, the subject of this paper.

The officers of the national forces responded most cordially to the invitation to enter the Association, and they now number a third of the entire active membership. The work done by the medical departments of the national services since their organization needs no eulogy; the Medical and Surgical History of the War of the Rebellion, the most magnificent contribution to military surgery the world has ever seen, is not only a monument to Otis, Woodward, Huntington and Smart, its accomplished editors, but to the entire medical department of the Army, whose work is embodied in it; the Naval Museum of Hygiene and the Army Medical Museum and Library are conspicuous evidences of the unceasing activity of the military and naval surgeon; but this last field of work, the union with the medical officers of the National Guard to disseminate and maintain throughout the entire country a lofty standard of efficiency in military medicine, surgery and hygiene, is, perhaps, from the standpoint of the successful administration of the sanitary affairs of a possible future war, the most important of all.

There can properly be no conflict between the medical officers of the National Guard and those of the regular forces, for each is complementary to the other. The regular army surgeon, from his familiarity with military organization and the hygiene and sanitation of armies ingrained by constant contact with the professional soldier, contributes matter of inconceivable value to the civilian surgeon whose military work is but an incident in an otherwise busy professional life. The National Guard surgeon, on the contrary, brings clinical experience founded upon the observation of large numbers of medical or surgical cases in civil life, the treatment of which, while not entirely such as will be possible in military environments, carries a vast amount of instruction to his military colleague, whose work in peace has to do only with a comparatively small number of cases afforded by a body of men selected for their entire freedom from pre-existing predisposition to disease.

In this spirit of mutual helpfulness, the members of the Association of Military Surgeons of the United States have held seven markedly successful annual conventions, the work of which is fully set forth in seven annual volumes of Proceedings, the regular services participating freely in all. The continuous interest in military medicine and surgery there manifested, as well as the progressive growth of the Association, is well shown by a tabular analysis of these volumes :

Volume.	*Pages.*	*Papers.*	*Members.*
1	31	2	62
2	180	10	109
3	264	17	183
4	712	37	274
5	530	36	342
6	442	24	406
7	710	47	421

Activity in professional work is shown not only by the large number of papers presented at the various meetings but by the character of them. Many of the contributions were of the most elaborate description, embodying the results of prolonged investigation and repeated experiment, so that these volumes constitute a compilation of the best and most modern literature of military surgery, and form an invaluable source of information for the military medical officer, whether of the National Guard or the regular service.

Some years ago the writer endeavored to crystallize the aims and objects of the Association into a few terse propositions, which were freely circulated at that time, and which may still be employed as an exposition of the *raison d'etre* of the organization.

The Association aims to promote and develop military medicine, surgery and hygiene in every possible way and in particular—

1. By the establishment of military practice as a well-defined and generally recognized specialty, which can be accomplished only by the organization of those interested in it.

2. By quickening the development of military medicine and surgery by the constant agitation of all topics pertaining to them.

3. By the encouragement of mutual acquaintance among military surgeons, and the addition to the professional relations of that social quality, which is so uniformly a stimulus to scientific growth.

4. By the establishment between the medical officers of the national services and those of the State troops of a reciprocal interchange of views and ideas which cannot fail to be of advantage to both.

5. By the provision of an appreciative audience—not only in the attendants upon its meetings, but in the still larger body represented in the readers of its proceedings—for the presentation of advances and improvements in military medicine, surgery, sanitation and equipment, and thus to incite improvement along those lines.

6. By the creation of a living and growing body of military medical literature in its publications, and, by the papers and discussions published, to stimulate thought and labor in medico-military channels.

7. By the stimulation of legislation beneficial to the medical departments of both national and State military and naval establishments, and to forward the organization of the medical staff in various States upon a healthy basis independent of the caprice of commanding officers.

8. And by the maintenance of an *esprit de corps* among medical officers, the existence of which shall insure scientific enthusiasm and unity of action in matters involving the welfare of the medical department in all military organizations.

To assist in accomplishing these purposes three classes of membership have been added to the Active, viz: Associate, Corresponding and Honorary. To become an active member a candidate must be a commissioned military medical officer in good standing, although membership may be retained after retirement or withdrawal from the service. To become an associate member a candidate must be a commissioned officer other than medical or an ex-medical officer. Associate members have all the rights and privileges of active members except that of holding office or voting, and their number is being recruited chiefly from the ex-officers of the War of the Rebellion, who are most cordially welcomed to the Association. The corresponding members are distinguished foreign military surgeons elected by the Association, and the honorary members are persons not qualified for active membership, who have achieved distinction in the military service, and who have been duly elected at a regular annual meeting. The extensive distribution of the membership is well shown by the accompanying table of the active and associate members, arranged by States or services:

Services.	*Members.*
Army	80
Pennsylvania	45
Navy	43
New York	32
Ohio	32
Massachusetts	19
Illinois	19
Missouri	14
Rhode Island	14
Connecticut	11
Marine Hospital	11
New Jersey	11
Wisconsin	11
Carried forward	342
Brought forward	342
Minnesota	8
California	7
Colorado	5
District of Columbia	5
Iowa	5
Maryland	4
Maine	3
New Hampshire	3
North Carolina	3
Virginia	3
West Virginia	3
Alabama	2
Arizona	2
Florida	2
Kansas	2
Mississippi	2
Nebraska	2
South Dakota	2
Georgia	1
Idaho	1
Kentucky	1
Michigan	1
Montana	1
Nevada	1
North Dakota	1
South Carolina	1
Utah	1
Vermont	1
Washington	1
Total	421

Uniting in this manner the military enthusiasm and scientific ardor of the local military surgeons of all parts of the country with the technical training and official activity of the officers of the national services, all the requisites essential for the accomplishment of the highest type of work seem to be afforded. The next annual meeting at Kansas City (June 1, 2 and 3, 1898) promises to be one of the most valuable ever held. A magnificent scientific program, prepared by the Literary Committee, of which the distinguished President of the

Army Medical School is Chairman, provides serious work of the most attractive type; the numerous professional associations of Kansas City and the State of Missouri foreshadow many profitable contributions, and the leadership of one of Missouri's most distinguished surgeons, the present incumbent of the presidential chair, insures everything that can make the meeting an unqualified success.

That the work so successfully inaugurated should continue throughout the indefinite future, there seems to be no reason to doubt. And, while it may be hoped that the loud tocsin calling the Nation to arms may never require the members to demonstrate their readiness to comply with the motto of the Association ("*Omnia pro patriæ caritate*") and sacrifice "all for love of fatherland," should that call peal forth, none would be quicker and none would be better prepared to respond than the men who, through the work of the Association of Military Surgeons, have kept themselves ever qualified and ever ready for the work they may have to do.

Selections.

Experiments with New Mauser Automatic Repeating Pistol, German Army.

v. Bruns gives the results of his experiments with this new military weapon, which is to replace the old revolver, now regarded as obsolete. It is described as a small caliber magazine pistol with a breech mechanism that is operated by the force of its own recoil, throwing out the cartridge shell, reloading and cocking by movements so rapid that the eye cannot follow them, and the finger which pulls the trigger has not time to release it before the parts are again in position to fire. The pistol is 29 cm long and weighs 1,180 g. The barrel is 14 cm long, caliber 7.63 mm, with 4 grooves. The magazine carries 10 cartridges which are 35 mm long and weigh 10 g each The steel-cased bullet has a length of 13.8 mm and a weight of 5.5 g. The charge of smokeless powder is 0.5 g. Six to seven shots can be fired in a second, and from 60 to 120 in one minute. The initial velocity was 425 m; at 100 m, 336; at 500 m, 196; and at 1,000 m 115 m per second. The muzzle energy was 50.6 mkg; at 100 m, 31.6; at 500 m, 196, and at 1,000 m, 3.7 mkg. Experiments were made in firing at pine wood, iron plates, a living horse and human cadavers, at distances of 10, 20, 50, 100, 200 and 300 m. The author agrees with the findings of von Coler and Schjerning that a very marked difference is hardly noticeable between the effect of missiles on dead and living tissues, at any rate not in bone injuries. Roentgen rays were used to examine fractures caused by the bullets. Wounds of entrance and exit were 5 to 7 mm in diameter, the opening of exit being, as a rule, slightly larger, and both decreased in size as the firing distance was lengthened. The effects of the bullet on the diaphyses of long bones at 20 to 200 m corresponded exactly to that of the infantry rifle (model 88) at 1,000 to 2,000 m. The bones were always comminuted but the bullet never lodged. From the surface to the bone the canal was smooth. At 50 m there was usually a widened tract of laceration in the tissues behind the bone, caused by bone splinters; but at 100 to 200 m this ceased to be apparent. In the epiphyses there were occasionally clean perforations, but also splintering, especially when Kocher's so-called "metaphysis" of the bone was struck. Behind an epiphyseal injury no lacerated space was found in the wound canal, which was then always smooth

and narrow, not exceeding the diameter of the bullet. On shooting through the head, the vault of the cranium was shattered at 10 m as with the infantry rifle at 1,000 m. The effects decreased with increasing distance, and at 50 m mere radiating fissures were visible in the skull. v. Bruns found in these experiments additional evidence of the fact that the zone of clean perforations both in the epiphyses and in the skull extends much farther out when full charges are used than with reduced charges at a fixed range, the method pursued in his experiments of 1889. Proceeding to test the penetrating qualities of the new pistol, the author found that the bullet passed through two bodies and lodged in a third at a distance of 10 to 50 m. It perforated pine wood 32 cm thick, and three sheet iron plates in succession 2 mm thick. v. Bruns concludes from the results of his experiments that the automatic repeating pistol is a great improvement upon the old revolver, and is a weapon of powerful penetration and great accuracy and efficiency. v. Bruns. Ueber die Wirkung und kriegschirurgische Bedeutung der Selbstladepistole (System Mauser). Rev. in Deutsch. Militärärztl. Zeitschr., Berl., 1897, xxvi, 544.

A French Hospital in the Greco-Turkish War.

Phocas gives the notes of 68 cases treated in this hospital, located in Athens. Gun-shot injuries of soft parts, 23; compound fractures, 21; gun-shot injuries of joints, 19; wounds of vessels, 2, and wounds of viscera, 3. Of the 23 gun-shot injuries of soft parts, 4 were wounds en cul-de-sac (all of lower limb) and 10 were wounds en séton (cheek, pectoral region, forearm, hip, gluteal region, foot); all of the latter did well, healing in from 25 to 30 days without fever or septic phenomena. All were treated expectantly, with antiseptic dressings, of course, but without irrigation or needless explorations. Of the 21 compound fractures due to gun-shot injuries, there were: Thigh, 6; arm, 6; forearm, 1; leg, 2; foot, scapula, 1; face, 2; spinal column, 1, and skull, 1. Infection occurred in five of these fractures, necessitating surgical intervention (resection, amputation); all recovered with one exception (fracture of skull). In the 19 cases of joint injury the large joints were involved 17 times. Fourteen were injuries of joints exclusively. In only one of these was operation performed. All recovered, 10 with good movement. The wounds to vessels are especially commented upon by the author. In one there was an incomplete fracture of the femur, which cut and entirely obliterated the femoral vessels, but there was no hemorrhage or consecutive aneurism. The visceral injuries comprised a double penetrating wound of thorax and an injury of the rectum; death occurred in each case. The author saw a large number of wounds of the extremities and a very small number of severe visceral lesions. But three deaths occurred among the 68 cases under his care. The hospital was located in Athens.

Phocas. Considerations sur le fonctionnement de l'Hôpital de campagne envoyé de Paris à la guerre grèco-turque. Nord. Méd., Lille, 1897, iv, 240. (It would appear that all of the injured described above were Greeks, in which case the wounds were inflicted by the Peabody-Martini rifle, caliber .45, lead bullet.)

The Sanitary Corps, National Guard, California.

The bill creating the Sanitary Corps, National Guard of California, was a step forward that has been duly appreciated by the medical department of the

Guard. Until the passage of this bill the National Guard was dependent upon the individual efforts of the regimental surgeons for medical supplies. The surgeon was also compelled to furnish his own instruments, and, for nurses and assistants, get along as best he could with untrained men, detailed not for their special fitness, but because they were inefficient soldiers and would be least missed out of the company. The surgeons were given commissions at the request of the regimental commander, without any regard to qualification, and all schools were represented in the service. To receive a commission in the present Sanitary Corps it is necessary for the surgeon to be a graduate of a regular school of medicine and produce satisfactory credentials as to character and professional standing. The applicant is then required to pass an examination before the Board of Medical Examiners, consisting of four surgeons appointed by the Commander-in-Chief and detailed by the Surgeon-General for this duty. With each regiment is one hospital steward, one assistant, one quartermaster-sergeant and sixteen privates. The non-commissioned officers and privates are drilled in the use and proper method of carrying the litter and in applying and administering first-aid dressings and treatment. While in camp they see that the orders of the surgeons in regard to sanitary matters are carried out. All the enlisted men in the Sanitary Corps wear a McCarthy belt. The weight of this belt with its contents (first-aid dressings) is less than two pounds; it fits comfortably around the waist, and, unlike the pouches worn in the regular service, is not clumsy and unsightly. For service with each regiment there is one Hanson medical chest, one field operating table, one large hospital tent, one consultation tent and twelve litters for carrying the sick or wounded. The field equipment is claimed by the author to be superior to that of the United States Army. During the late encampment of the First Infantry Regiment, with 600 enlisted men in camp for ten days, and with a temperature of from 100° to 105° F. in the shade, there was not a case of the 180 treated by the medical department that was the result of bad water or a lack of sanitary precautions. — Farrell (Capt. P. J. H.), Asst. Surg., N. G., Cal. The Sanitary Corps, N. G., Cal. Pacific Med. J., 1897, xl, 669.

Hernia in Military Life—The Radical Cure of Inguinal Hernia.

Plahl prefers Bassini's operation for the radical cure of inguinal hernia. In 95.6 per cent of all operated cases healing took place by first intention. In 216 cases where the hernia was not strangulated, this surgeon performed the radical operation without a death. In 98 per cent the cure was permanent. Following Bassini's method the after-treatment is short, a majority of the patients being discharged in from nine to thirteen days. Plahl draws attention in the second part of his article to the importance in military life of the radical cure of hernia. But a distinction must be drawn between those who are compelled to serve with the colors and those who choose a military career as their life calling. The importance of hernia in the matter of compulsory military service is shown by the fact that in five years (1889–1893) in Austro-Hungary not less than 78,585 men or 22.1 per cent of all liable for military service were found unsuitable therefor by reason of existing hernia. Since operation for the radical cure of hernia cannot be made compulsory, it is not likely that this number will diminish in the future. The matter is entirely different with officers and non-commis-

sioned officers who intend to make military life their calling. Here the radical operation is a very decided benefit, as can easily be seen. [In Bassini's original operation silk was used for ligature, which is objectionable and is now generally abandoned for some absorbable material in its stead.] Plahl. Ueber die Arten der Radikalbehandlung von Leistenhernien und der Einfluss derselben auf die Diensttauglichkeit der Offiziere und Soldaten sowie auf die Eignung zur Militärerziehung. Rev. in Deutsch. Militärärztl. Zeitschr., Berl., 1897, xxvi, 548.

Wounded in the Naval Battles Between Japan and China—Sanitary Conditions Prevailing During the War.

Suzuki, surgeon Japanese navy, reports that, in the naval engagement of Phung-do, July 25, 1894, one Japanese vessel received two shells in her side, and another Japanese warship one, but no material damage was done, and no one killed or wounded. In another action a vessel was struck by two shells in the side with scarcely any damage to the ship and none to the crew. In the battle of the Yalu, Japanese men-of-war received more than 100 shells in various parts and 298 officers and men were killed or wounded. The percentage of injuries according to rank was as follows: Seamen, 57.38 per cent; petty officers, 16.44 per cent; officers, 10.07 per cent; civilians, 2.35 per cent. Other non-combatants account for 6.38 per cent in each class. In a sea fight all those working above the water line are equally liable to be killed or wounded. No Japanese ship in this war was perforated below the water line, hence the percentage of killed and injured was always least in the engineering class. At the Yalu, 10 Japanese were killed "by the vibration of air caused by the firing of their own guns." In some cases shells did severe damage on Japanese ships. One vessel had 30 persons killed and 70 injured by the explosion of one shell. Another had 14 killed and 27 injured in like manner. Of course the greatest damage was done by shells that burst. The bursting of even small shells did great injury. In one instance, 4 persons were killed and 6 wounded by the explosion of a very small shell. In the 298 killed or injured the head wounds were most frequent, the ratio being 21.15 per cent of the total number. Next in order came wounds "of the greater part of the body," of the upper limbs, of the lower limbs, of the abdomen and lumbar region, and of the chest and back, while the neck suffered least. In a land fight the number of wounds of the lower extremities is commonly greatest, and those of the upper extremities and head next; then come the chest and back, the abdomen and lumbar region, whilst the neck wounds are again fewest. Comparing the number of wounds received in a land fight with those received in a naval combat, it is found that they are almost identical. The difference is that in a land fight the greatest number of injuries received are in the extremities, the head wounds coming next, while in battles at sea the head wounds are most numerous and those of the extremities come next. Of the 298 injured in this battle 90 were killed, 33 died of their wounds, and 175 recovered. All injuries were treated with antiseptic precautions, and as a consequence no wound infection occurred except in the case of one man who died from erysipelas six months after admission to the hospital. In the attack upon Wei-Hai-Wei, the Japanese warships were struck 28 times and 66 men were killed or injured, an average of from two to three killed or wounded to every shell received. In speaking of the sanitary condition of the navy during the war, the author mentions kak'ke, a disease supposed to

be due to the ingestion of too large a quantity of carbohydrates, such as rice, and too little of the albuminoids, such as meat. This disease seriously crippled the effectiveness of the Japanese navy before the war with China, but was eradicated by a proper revision of the dietary. Previous to this change in diet, the average weight of the Japanese seaman was 52.50 kg.; but after that change the average weight increased. During the war (July, 1894, to December, 1895), 7,106 cases of disease occurred in the navy, exclusive of wounds received in battle, an average of 12.19 cases per day. The average percentage of sickness per 100 of force was 3.71. The total number of deaths during the 18 months was 215, being 1.06 per cent of the total force engaged. The deaths from disease, excluding drownings and suicides, were only 177, a loss of 0.87 per cent of total force. If we compare the number of deaths from disease with the number of killed in action, 150, the former is found to exceed the latter by only 27. The author holds that such a small number of deaths is proof of the efficiency of the sanitary corps of the navy. In the general sick list during the war, he found that venereal diseases and their sequelæ comprised 37.69 per cent of the total number of cases treated. There were 131 cases of typhoid fever with 24 deaths; 55 of the cases occurring on one ship. Ninety-five cases of cholera gave 52 deaths, whilst in 167 cases of malaria 8 died. In 1894 the average individual weight of the naval force was 58.238 kg., while in 1895 it was 58.463 kg., thus showing an increase of body weight during the war.

Suzuki (S.) Note on the wounded in the naval battles between Japan and China during 1894–95, with some considerations of the sanitary conditions prevailing during the war. Lancet, Lond., 1897, ii, 965.

Trigger Finger in the German Army.

Schulte has collected reports of nine cases of this peculiar affection, and in addition narrates the histories of five cases which came under his own observation. Trigger finger occurs in recruits of the better class (Einjährig-Freiwilliger) who are just beginning their military service, and who have never done much manual labor. Soon after beginning service, the soldier experiences slight pain and swelling in the neighborhood of the metacarpo-phalangeal joints of the left hand. Sometimes there is only a feeling of strain and tension. In the morning the recruit awakens with his fist tightly closed, and finds that the left hand cannot be opened without the aid of the right. The cramp diminishes or disappears after exercising the fingers, but perhaps will reappear at the next drill after the gun has been held for a considerable length of time. The gun may then be held imprisoned by the fingers of the left hand which are unable to respond to the power of the will and release it. It may be necessary to call the right hand into service to bring this about. This peculiar form of muscular spasm is met with almost exclusively in the fingers, and is accounted for by the arrangement of the soft parts on the flexor side of the hand. The cause of this condition in soldiers is a matter of considerable interest. In none of the cases reported was there any history of rheumatism or gout. None had been used to manual labor. All belonged to the infantry. In each case the trouble was first observed from five to eight weeks after beginning service. All of these men used the same style of gun (M. 88), the bottom of the butt of which is provided with a metal plate having a very even surface, while the angles at the junction of the sides and bottom of the butt are very sharp. The author attributes the

pathological condition described to the injury inflicted by these sharp edges or angles to a hand unused to manual labor, during the frequent handling of the gun while the recruit is learning the manual of arms, or, later, while carrying the weapon on protracted marches. The tendon sheaths or the tendons themselves are the parts involved. The middle, ring or little finger is the one affected (often all three together), never the index finger. This may be accounted for by the fact that the butt is smaller and its edges less sharp at the point where the index finger rests; moreover the ball of the thumb affords considerable protection at this point. Sometimes flexion and extension are both hindered, but usually it is extension alone that is involved. The fingers can be extended with difficulty or not at all, except with the aid of the other hand; they reach complete extension, not gradually but with a jerk, and this movement is often accompanied with an appreciable noise or by a feeling of crepitation in the affected metacarpo-phalangeal joints. In some cases there is a fibrinous infiltration in the synovial sac or nodular thickenings of the tendons themselves. In 23 fingers affected only 2 were on the right hand. The treatment would seem to consist principally in removing the cause. The butt of the gun used by this class of recruits should have rounder edges. If taken in time, a complete cure can be anticipated in three or four weeks from the use of hot applications, with rest and later massage and active movements of the fingers. In old, neglected cases the firm, tendon-like bands which are found in the neighborhood of the affected metacarpo-phalangeal joint must be cut. Schulte. Federnde Finger in der deutschen Armee. Deutsch. Militärärztl. Zeitschr., 1897, xxvi, 513.

Infection of Gunshot Wounds Through Particles of Clothing.

Karlinski says that, from many reports of military surgeons, it is known, on the one hand, that particles of clothing carried into the tissues by a bullet or other projectile, may give rise to localized abscesses and even to general infection. On the other hand, certain observers have shown that when fragments of cloth artificially impregnated or infected with micro-organisms capable of producing suppuration were implanted subcutaneously, the wounds healed without reaction. This discrepancy led the author to make the experiments detailed below in order to determine how far articles of clothing, whether accidentally or purposely infected, when torn off and carried into the tissues by the projectile, could be held accountable for wound infection. While Karlinski was conducting his experiments, certain others were working along the same lines, but not, as he believes, under normal conditions, since they used a smaller quantity of explosive than would be employed under the usual circumstances. Of course, this must produce some differences in results, since it has been shown that the rotation and heating of a missile with a diminished charge and at short range are unlike what has been observed with a full charge at long range. The author conducted his experiments as closely under normal conditions as possible, and used every precaution to prevent infection from any and every source that would militate against the reliability of his results. Hence he used a non-infected missile, shot from a clean barrel, and employed a full charge at distances from 40–200 m. He used pieces of worn uniform, protected the wound made from secondary infection, and watched carefully to see if the fibers of cloth, forced by the projectile into the periphery of

the wound, would produce abscesses or not. Rabbits were employed in all the experiments. The spot selected for the wound was in the muscles of the thigh. The rabbit was fastened securely on a board in such a manner as to prevent injury from bullet to thigh bone or femoral artery, and to avoid possible infection from the board. An 8 mm Mannlicher rifle was used. One hundred rabbits were shot, but 41 were lost through injury to bone or artery and were not included in the results, nor were 29 others, in which only the skin and subcutaneous cellular tissue were wounded. This left 30 with just such wounds as were desired. In one series the thigh was shaved and disinfected. After the wound was made the animal was prevented from interfering with the dressing and was kept in a box under aseptic precautions in order to avoid secondary infection. The wound was carefully closed with iodoform collodion. Before each shot was fired, the bullet was cleaned with sublimate solution and the barrel of the gun was disinfected with formalin.

In the first series of experiments artificially infected cloth was used. For the first rabbit a very virulent staphylococcus culture was chosen; a piece of cloth was sterilized and infected with this bouillon culture; the rabbit's leg was shaved and disinfected; the infected cloth was bound over the spot where the bullet was to enter; the distance fired was 100 m, and the missile perforated the thigh from within outwards without touching the bone or artery. The canal made by the bullet was not disinfected, but over the wounds of entrance and exit a piece of sublimate gauze was laid and fastened by iodoform collodion. Two days later the dressing was lifted from the wound of entrance and in the bloody serum under it, staphylococci were found by culture and the microscope. In two days more the whole canal filled with thick pus. Death occurred on the sixth day after injury, and at the autopsy staphylococci were found in the pus and in the muscles about the wound and in the blood. The second rabbit was treated as the first, except that the canal made by the projectile was thoroughly cleansed immediately with a strong sublimate solution and packed with sterilized sublimate gauze, the wounds of entrance and exit being closed with iodoform collodion. The animal was killed on the fourth day after injury. The walls of the canal looked normal; there were six small abscesses in the surrounding muscle, but the fluid in the wound and gauze was sterile. Numerous staphylococci were found in the pus and a few in the blood. With the third rabbit the conditions of the experiment were the same as with the first, except that the distance was 200 m. After death in five days, suppuration was discovered in the canal and muscles, together with a large abscess. Numerous staphylococci were found in the pus and blood. In the fourth experiment the same conditions were observed as in the second, except that the distance was 200 m. The animal was killed on the sixth day and a small amount of purulent fluid was found. In the surrounding muscles there were small abscesses containing staphylococci. With the fifth rabbit the same conditions were observed as with the first, except that the leg was not shaved and disinfected before being wounded. After five days the animal died and the wound canal was found full of thick pus; the surrounding tissue was broken down into an abscess; there was a serous exudate in the peritoneal cavity, while the pus in the wound and the blood contained staphylococci. After having shot the sixth rabbit, the wound was disinfected and packed with

sublimate gauze, while the neighborhood of the wounds of entrance and exit were shaved and disinfected. After six days the animal died and a small amount of purulent fluid was found in the canal. There were five small abscesses in the surrounding tissue, purulent fluid in the peritoneal cavity, miliary abscesses in the liver, kidneys and heart muscle, and staphylococci were produced in a pure culture from the abscesses, the blood and the peritoneal fluid. The seventh rabbit was treated exactly as the sixth, except that it was shot at a distance of 200 m. On the tenth day it was killed. The fluid in the canal was sterile ; staphylococci were produced in a pure culture from three small abscesses near the wound of exit. The bouillon culture was now diluted one hundred times and the cloth to be used was soaked in it ten, instead of twenty minutes, as was previously done. The eighth and ninth rabbits were shot in the usual manner, and showed the same results. The bouillon culture was again diluted so that the strength employed in the next five rabbits was a one-ten thousandth dilution of that employed in the first series. The tenth, eleventh, twelfth, thirteenth and fourteenth rabbits gave about the same results as described in the first series. The conclusions of the author in regard to the results of the first series of experiments were as follows : The otherwise sterile missile in passing through artificially infected cloth carries with it into the living tissues infecting micro-organisms which are capable of producing both local abscesses and general septic infection. Thorough cleansing, immediately after the injury, of the passage made by the bullet, with a strong antiseptic solution, the filling of the wound with sublimate gauze and the closing of the openings with iodoform collodion hinders neither the formation of abscesses in the periphery of the canal nor general infection. In the second series of experiments pieces of cloth cut from old, worn, blue uniform trousers were employed. The cloth was fastened on the rabbit's leg as before after a small portion of its texture had been taken for control examination. The results were the same as in the previous series ; the pathogenic bacteria harbored in the cloth (bacillus *coli communis, streptococci and staph. aur.*) were carried into the wound along with the cloth and produced local abscesses and general infection. In the third series of experiments pieces cut from a soiled and worn pair of drawers were employed with the same results as had been previously obtained. In the fourth series the experiments were carried on as before, except that immediately after the receipt of the wound it was at once cauterized with the Paquelin cautery, and then dressed antiseptically, but the results were the same as in all the earlier series. The author concludes by saying that in two previous experiments on dogs he had found in the muscles and in the lungs, far from the seat of injury, microscopic fibers of cloth. During the investigations just detailed where rabbits were used, 41 animals died immediately from destruction of the femoral artery. In these cases, on microscopic examinations of sections of tissue from the uninjured surroundings of the canal, he never failed to find fibers of cloth. He is compelled to attribute local and systemic infection in such instances to the fibers of cloth torn off by the missile in its passage and often forced into the tissues far from the seat of injury. Moreover, the most careful disinfection of the canal caused by the bullet had no preventive effect whatever. The presence in wearing apparel of micro-organisms capable of producing sup-

puration is by no means uncommon. Nine references bearing upon this mode of infection in gun-shot wounds conclude the article. Karlinski (J.). Zur Frage der Infektion von Schusswunden durch Mitgerisenne Kleiderfetzen. Centralbl. f. Bakteriol (etc.), 1 Abt., Jena, 1897, xxii, 310, 386.

The Influence of Food Upon the Weight of Soldiers.

One hundred and twenty-five new men, constituting the 1st battalion of the 51st infantry regiment (Austrian Army) were weighed and measured on reporting October 10, 1896, and again three months later, to determine how weight and height were influenced by the rations these recruits received and by their altered manner of life. The averages for the 125 men were: height, 165.5 cm; weight October 10, 62.89 kg; January 10, 65.89 kg; therefore there was an average gain in three months of 3 kg for each soldier. Beneke found that the averages of the 333 men in the 11th Jäeger battalion in Marburg were for height, 168.47 cm, and for weight, 63.044 kg. The results obtained by Schorr (as detailed above) relative to increase of weight, show that the rations were sufficient in quantity and quality, and that military training has no evil effect on health provided the organism is sound at the start. These soldiers received daily 120 gm of albuminoids of which 42 per cent was animal in origin; 56 gm of fats, and 500 gm of carbohydrates. According to Roth and Lex, a soldier's rations should be composed of the following elements: breakfast, 10 gm of albuminoids, 12 gm of fats, and 54 gm of carbohydrates; dinner, 56 gm of albuminoids, 28 gm of fats, and 132 gm of carbohydrates; supper, 27 gm of albuminoids, 12 gm of fats, and 61 gm of carbohydrates. The necessary food elements should make up a mass of sufficient volume to produce a feeling of fullness and satisfaction. Voit's ration consists of from 1,200 gm to 1,840 gm per diem, and this has been found to induce the feeling above referred to. Schorr (J.). Beistimmungen des Körpergewichtes der Recruten und Einfluss der Ernährung auf dasselbe. Wien. klin. Rundschau, 1897, xi, 566.

Fatigue and Its Consequences in the Army.

Lejeune, in a paper read at a meeting of the Sanitary Officers of the Belgian Army at Mons, says that there are three grades of excessive fatigue, each depending upon the manner of production. He gives examples of method of causation as follows: First, a horse may be compelled to gallop until he drops dead; second, one may pursue an animal which it is sought to capture alive until exhaustion makes it passive; third, a person may work continuously without necessary pauses for rest. This last is the kind observed in soldiers. In the army every one, no matter what his hereditary or acquired powers of resistance may be, is compelled to arise at the same hour, make the same number of steps with the same celerity, and be clothed and nourished in the same manner as every other soldier. The pathological conditions most likely to be aggravated or even indirectly produced by excessive fatigue are typhoid fever, tuberculosis, syphilis, rheumatism and sunstroke. That exhaustion predisposes to infectious diseases is well known and has been demonstrated experimentally. According to Malvez excessive fatigue favors the transformation of a harmless bacillus into the bacillus *coli communis*, whilst Kelsch maintains that the micro-organism of typhoid exists as a saprophyte in the intestinal tract of those persons whose powers of resistance have been lessened by exhaustion. This explains why se-

vere epidemics of typhoid occur in the army while civilians are comparatively exempt. The author quotes Rendon, who says that the cases of typhoid produced by fatigue depend upon a change in the blood and the saturation of the organism with leucomaines. Fatigue fever is very common in soldiers, especially in the cavalry. The symptoms are slight elevation of temperature, weakness, severe pains in the legs and digestive disturbances. Of course, rest is the best treatment. The cause of this fatigue fever is an auto-infection through products produced by exertion which the organism cannot eliminate quickly enough. Exhaustion has a decided influence upon syphilis. Constan mentions the cases of two soldiers who suffered from syphilis contracted long before, and who had not recently undergone fatiguing duties. For a considerable period the disease had remained quiescent. After 8 days of active exercise in the manoeuvers, the disease broke out anew in the form of tibial periostitis. It has likewise been shown that exhaustion and not cold leads to rheumatism. Practical and experimental demonstrations prove that fatigue strongly predisposes to sunstroke, and this is due not only to the exhaustion produced by very active movements, but also to that resulting from a soldier's standing immovable, heavily laden with equipment, and with his muscles and attention stretched to the utmost for a considerable length of time. It is superfluous to mention the effect of fatigue in the production of diseases of the heart and nervous system. Many of the officers working out problems in the *Kriegschule* suffer from neurasthenia. The author discusses further the influence of exhaustion upon muscles and joints. Having enumerated the evil results of fatigue in soldiers, Lejeune suggests certain prophylactic measures. On the one hand, he advises a more careful selection of recruits, especially for the infantry; and on the other, a diminution of the tasks imposed. Lejeune (M.). Die Uebermüdung und ihre Folgen in der Armee. Militärarzt, Wien, 1897, xxxii, 155.

The Army Medical Service in Great Britain.

Cox, in a recent address at the opening of the Medical Schools of St. Vincent's Hospital, Dublin, spoke of the many disagreeable features connected with the Army Medical Service, of the numerous acts of bravery and self-sacrifice which had been performed by Army surgeons, and the lack of reward and even of recognition with which they had been met. He cited the case of the Duke of Cambridge, who was rescued from the Russian infantry at Inkerman by Assistant Surgeon Wilson, and who "declared that his military instincts forbade the idea of giving medical officers military rank or title." Professor Birmingham, on the same occasion, said that he felt that the Army Medical Service as now constituted was such that no spirited young fellow could join. Sir William Thomson, in speaking on the same subject at the opening of the schools of the Royal College of Surgeons in Ireland, called attention to the fact that there were now 80 vacancies in the Army Medical Service which could not be filled. One difficulty with this service seems to be the well known matter of rank. Another is that the medical officers constitute one body while the male nurses and bearers form another, which is quite distinct and marked by a different organization, uniform, etc. The medical officers very naturally wish this dual arrangement abolished and a Royal Corps established embracing both departments. The speaker reminded his hearers that the death rate of army medical officers in Great Britain is nearly twice that of

the combative officers (13 to 7) and that twenty surgeons now living are wearing the Victoria Cross.

Cox (M. F.). The Army Medical Service. Brit. M. J., Lond., 1897, ii, 1099. Thomson (Sir W.). On the Army Med. Service, Brit. M. J., Lond., 1897, ii, 1332.

Bayonet Wound of the Abdomen.

Surmay reports a case of bayonet stab of the abdomen, where the wound of entrance was on one side near the anterior superior spinous process of the crest of the ilium, and that of exit on the other side near the corresponding prominence, the distance between the two wounds being 31 cm. From the examination of the patient made soon after the receipt of the injury and from his rapid recovery without distinctive symptoms, the author was left in doubt as to whether the peritoneal cavity was entered, whether the intestine was punctured at all or only slightly, or finally, whether the bayonet simply traversed the tissues of the abdominal wall. Surmay has collected eight other cases of abdominal wounds, all made by the Lebel bayonet. Only two terminated in death, the remainder recovering without surgical intervention. The six cases in which recovery took place may be summarized in a few words: 1. Deep penetrating wound in the left hypochondrium with probable injury to stomach and heart. 2. Transfixion from lumbar region. to epigastrium. 3. Transfixion from umbilicus to loins; probable intestinal perforation. 4. Penetrating wound of left hypochondrium; escape of gas from wound. 5. The bayonet penetrated the skin from above downwards and from behind forwards in axillary line at level of eighth intercostal space; the weapon was streaked with blood for a distance of 21 cm, but there was no hemorrhage from the wound. 6. Penetrating wound 5 cm deep with entrance about midway between anterior superior spinous process of the ilium and the umbilicus. No details are given of the fatal cases. The author remarks that the rapid and uneventful recovery in these cases is not surprising when one considers the form of the Lebel bayonet. It has a very fine point and is of a triangular shape with blunt edges. It penetrates tissues with the ease of a trocar. Thus, it may pass by abdominal organs without injuring them, or, if a puncture occurs it will be so small as to permit of a natural co-aptation and rapid healing. Surmay concludes by saying that in all penetrating wounds of the abdomen made by the Lebel bayonet, it is best to refrain from all operative interference unless in the face of indications both precise and urgent. Surmay. Coup de baionette ayant traversé la ventre de part en part; guérison sans intervention opératoire et sans aucun accident en moins de vingt jours. Arch. gén. de méd., Par., 1897, ii, 462. (Cf. for fatal head injury from Lebel bayonet, Charbonnier. Perforation de la base du crâne par un coup de baionette. Arch. de méd et pharm. mil., Par., 1897, xxx, 195.—Ed.)

Operation for Penetrating Pistol Shot Wound of Abdomen with Perforation of the Intestines.

Parke reports a case of this injury injury inflicted by a .32 caliber bullet. Immediate operation. One wound of mesentery and five perforating wounds of intestine, the bullet being found in the gut. Openings closed; recovery.

Parke (C. R.). N. Y. Med. J., 1898, lxvii, 88.

Early Diagnosis of Tuberculosis in the Army.

Kelsch proposes, by means of Roentgen rays to make an early diagnosis of tuberculosis, and thus eliminate from the

army all those young latent tuberculous cases in which no disease can be detected by ordinary means of physical examination. Paris Letter, Med. Rec., N. Y., 1898, liii, 179.

Sick Bays on Battleships.

It would appear from the report of the Surgeon General, U. S. N., that in ships of the *Indiana* class there is no room even in times of peace to treat the sick and injured, and, in battle, no space whatever available for the care of the wounded. Editorial, Medical Rec., N. Y., 1898, liii, 197.

Account of Typhoid Fever in Company F, Ninth Regt., N. G. of Pennsylvania, at Annual Encampment at Gettysburg, in 1894.

Weaver (W. G.), Penna. Med. J., Pittsburg, 1898, i, 337.

The Emergency Army Ration.

Popular accounts of the recent experimental march of the Fifth Infantry, U. S. A., from Fort McPherson, Ga., to Chickamauga Park, upon which march the emergency ration was tested, are to be found in the Baltimore *American;* the *Telegram*, Worcester, Mass.; the *Citizen*, Brooklyn, N. Y., all of February 6, 1898.

Surgeon Carter's Vindication of the Marine Hospital Service.

Some time since a physician in Pensacola wrote a letter criticising the efficiency of the quarantine work of the Marine Hospital Service on certain occasions in the South. For a synopsis of a very able reply by Surgeon H. R. Carter of that service, see editorial N. Y. Med. J., 1898, lxvii, 189.

Penetrating Wounds of the Abdomen.

Abstract of Vulliet's article based upon an analysis of 335 cases published since 1890. Railway Surgeon, Chicago, 1897, iv, 338.

Reviews.

Traumatic Injuries of the Brain. Phelps.

The profession should feel under obligation to Dr. Phelps for his timely and useful contribution to a very important surgical subject. The whole book is deserving of great praise, but the second part is of unusual interest as it treats of a class of injuries common in civil life, with which all practitioners should be more or less familiar.

Chapter VII is devoted to Pistol-shot Injuries of the Head in their medico-legal relations. The subject is concisely but admirably presented and discussed, with experimental illustrations, which adds much to its elucidation. These experiments were made with great care, and establish beyond cavil many points as facts about which formerly there was doubt or unreliable data.

In Chapter VIII the author considers Pistol-shot Injuries in their Surgical Relations, and is replete with interest to the surgeon. The space at our disposal is too small for more than a passing reference; but we can scarcely refrain from again expressing our admiration for the advanced position he has taken in regard to diagnosis and treatment of these head injuries, a position which, in the light of modern surgery, is unassailable. It will do much towards mitigating the embarrassment of expert evidence before courts of justice, where all sorts of obsolete evidence is brought forward as authority upon questions which can only be properly interpreted by the achievements of modern research and practice.

The author reviews the various methods of diagnosis at our disposal, and his judgment upon them appears, in the main, correct. It seems to us, however, that the Nelaton probe possesses no other advantage in brain surgery than its bulbous extremity, as too much force is required to obtain the *lead evidence* to justify its use for that purpose; and Dr. Phelps' recommendation of the finger as a probe in similar conditions should only be accepted in very exceptional cases, if at all. It is true he restricts its use to large wounds; but when it is considered how few men possess the exquisite tactile sense necessary for such exploration in

so delicate a tissue, it will be deemed at least hazardous.

The author's opinion that the Roentgen rays have been of little assistance so far in our exploration of head injuries is probably correct, as the difficulties attending their use are many, and for emergency cases these difficulties appear insurmountable. But, still we admit with reluctance the failure of the great discovery to render assistance in a field of surgery where such assistanee is so often sadly needed; while its use has been so satisfactory in other departments.

Judging from our own experience we would have thought that the percentage of recoveries from small encysted balls should be much greater, although we are decidedly in favor of extraction in every case when practicable as recommended by the author.

J. FORD THOMPSON.

News Notes.

The results of sanitation in the German Army for the period of the past thirty years show that twenty-three thousand fewer men fall ill every year than formerly and that twenty-two hundred fewer die. Jour. Am. Med. Asso., Chicago, 1898, xxx, 277.

In reviewing the proceedings of the Seventh Annual Meeting of the Association of Military Surgeons of the United States, the Cleveland Journal of Medicine, Jan., 1898, lii, 27, says: "This volume is a credit alike to the Association, the editor, Dr. Pilcher, and the printer. There has never come into our hands the transactions of any society so creditably published."

An army medical board will be in session in Washington, D. C., during the month of May for the examination of candidates for appointment to the Medical Corps of the U. S. Army to fill existing vacancies. Persons desiring to present themselves for examination by the board should make application to the Secretary of War before April 15, 1898, for the necessary invitation, giving the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from which they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates, based on personal acquaintance, from at least two reputable persons as to citizenship, character and habits. The candidate must be between twenty-two and twenty-nine years of age, and a graduate from a regular medical college, as evidence of which his diploma must be submitted to the board. Successful candidates at the coming examination will be given a course of instruction at the next session of the Army Medical School, beginning in November, 1898. Further information regarding the examinations may be obtained by addressing the Surgeon General, United States Army, Washington, D. C.

Experiments of an interesting nature have lately been made at the instigation of the Prussian war office to decide the question as to whether the consumption of small quantities of sugar renders the tired muscles capable of renewed exertion. In order to obtain a practical result, the person who was made the subject of experiment was kept totally ignorant of the object of the experimenters. On one day a sweet liquid was administered containing 30 grains of sugar, on the next day a similar liquid, containing a sufficient amount of saccharin to render it indistinguishable from the other as regarded taste. After a very large amount of muscular work had been performed, it was found that better results could be obtained on the days when the sugar was given than on the days when saccharin was given. The blood had become very poor in sugar in consequence of the severe muscular effort, and the administration of a comparatively small quantity of sugar had a markedly invigorating effect. Atlantic Medical Weekly, Jan. 29, 1898, ix, 77.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from January 20, 1898, to February 19, 1898.

Major William W. Gray, Surgeon, is relieved from duty at Fort Apache, Arizona, to take effect upon the expiration of his present leave of absence and ordered to Fort Huachuca, Arizona, for duty.

Leave of absence for one month, to take effect on or about March 1, 1898, is granted Captain Charles B. Ewing, Assistant Surgeon, Jefferson Barracks, Mo.

Captain Paul F. Straub, Assistant Surgeon, is relieved from duty at Angel Island, California, and ordered to report in person to the Commanding General Department of the Columbia, without delay, for assignment to duty.

1st Lieutenant Carl R. Darnall, Assistant Surgeon, is relieved from duty at Fort Clark, Texas, and ordered to Fort McIntosh, Texas, for duty at that post, relieving Captain Frederick P. Reynolds, Assistant Surgeon.

Captain Reynolds, on being thus relieved, is ordered to Vancouver Barracks, Washington, for duty at that post.

By direction of the President, Captain Jefferson D. Poindexter, Assistant Surgeon, will report in person to the President of the Army Retiring Board, convened at the Army building, New York city, at such time as he may designate, for examination by the board.

Captain William L. Kneedler, Assistant Surgeon, is relieved from duty at San Diego Barracks, Cal., and ordered to report in person to the Superintendent of the U. S. Military Academy, West Point, New York, for duty at that post.

Captain Charles F. Mason, Assistant Surgeon, is relieved from duty at West Point, New York, to take effect upon the expiration of the leave of absence granted him, and ordered to Fort Logan, Colorado.

Leave of absence for six months, on surgeon's certificate of disability, with permission to go beyond sea, to take effect on or about February 20, 1898, is granted Major Louis S. Tesson, Surgeon, Fort Ethan Allen, Vermont.

A board of officers, to consist of Colonel Charles H. Alden, Assistant Surgeon General; Major James C. Merrill, Surgeon; Captain George P. De Shon, Assistant Surgeon, is appointed to meet at the Army Medical Museum building, in this city, on Tuesday, April 12, 1898, at 10 o'clock A. M., or at such time thereafter as practicable, for the examination of such officers of the Medical Department as may be

ordered before it to determine their fitness for promotion.

1st Lieutenant Benjamin Brooke, Assistant Surgeon, is relieved from temporary duty at the Army and Navy General Hospital, Hot Springs, Ark., to take effect, April 6, 1898, and will then repair to this city and report in person on April 12, 1898, to the president of the examining board for examination as to his fitness for promotion, and upon the completion of his examination will report in person to the Adjutant General of the Army for orders.

The following-named officers will report in person to the president of the examining board, appointed to meet at the Army Medical Museum building, in this city, for examination as to their fitness for promotion, and upon completion of their examinations will return to their proper stations:

1st Lieut. Alexander N. Stark, Asst. Surgeon.
1st Lieut. Charles Lynch, Asst. Surgeon.
1st Lieut. Edward L. Munson, Asst. Surgeon.
1st Lieut. Charles E. B. Flagg, Asst. Surgeon.
1st Lieut. James M. Kennedy, Asst. Surgeon.
1st Lieut. Guy C. M. Godfrey, Asst. Surgeon.
1st Lieut. William F. Lewis, Asst. Surgeon.

The leave of absence on surgeon's certificate of disability granted Major Charles K. Winne, Surgeon, is extended two months on surgeon's certificate of disability.

Major Egon A. Koerper, Surgeon, is relieved from duty at Fort Crook, Nebraska, to take effect upon the expiration of his present leave of absence, and will then report in person to the Commanding General Department of the Platte for duty as Chief Surgeon of that department.

A board of officers, to consist of Lieutenant Colonel William D. Wolverton, Deputy Surgeon General; Major John Van R. Hoff, Surgeon; Captain Frank R. Keefer, Assistant Surgeon, is appointed to meet at Vancouver Barracks, Washington, on Tuesday, February 22, 1898, at 10 o'clock A. M., or at such time thereafter as practicable, for the examination of such officers of the Medical Department as may be ordered before it to determine their fitness for promotion.

1st Lieutenant John S. Kulp, Assistant Surgeon, will report in person on February 22, 1898, to the president of the examining board, appointed to meet at Vancouver Barracks, Washington, for examination as to his fitness for promotion.

1st Lieutenant Irving W. Rand, Assistant Surgeon, is relieved from duty at Fort Huachuca, Arizona, and ordered to Fort Duchesne, Utah, for duty.

1st Lieutenant Charles E. B. Flagg, Assistant Surgeon, is relieved from duty at Fort Duchesne, Utah, and ordered to Columbus Barracks, Ohio, for duty.

Captain H. C. Fisher, Assistant Surgeon, is granted three months and two days leave, to take effect on or about February 1, 1898.

Captain Henry A. Shaw, Assistant Surgeon, will report in person at Fort Crook, Neb., for temporary duty at that post, and upon the arrival there of 1st Lieutenant Deane C. Howard will return to his proper station at Fort Snelling, Minn.

Official List of Changes in the Medical Corps of the U. S. Navy from January 29, 1898, to February 20, 1898.

January 29—Passed Assistant Surgeon L. H. Stone ordered to be examined for retirement February 4, and to await orders.

Passed Assistant Surgeon B. R. Ward, upon completion of temporary duty in New York, to proceed home and await orders.

January 31.—Medical Inspector J. C. Ayers, ordered to assume charge of the hospital on Widow's Island, in addition to present duties.

Assistant Surgeon H. H. Hass ordered to the "Vermont."

February 1.—Surgeon A. C. Russell ordered to duty in the Bureau of Medicine and Surgery, February 9.

February 4.—Assistant Surgeon G. C. Hubbard ordered home and granted three months' sick leave.

February 11.—Passed Assistant Surgeon L. H. Stone, retired, February 10.

February 12.—Assistant Surgeon G. C. Hubbard sent to St. Elizabeth's Government Hospial for the Insane.

Assistant Surgeon J. C. Thompson detached from the Naval Hospital, Mare Island, Cal., and ordered at once to the "Mohican."

Official List of the Changes of Stations and Duties of Commissioned Officers of the U. S. Marine Hospital Service from January 20, 1898, to February 20, 1898.

Irwin, Fairfax, Surgeon—To proceed to Marcus Hook, Pa., and inspect State Quarantine Station.—January 22, 1898.

Smith, A. C., Passed Assistant Surgeon.—To proceed to Marcus Hook, Pa., and inspect State Quarantine Station.—January 22, 1898.

Board convened to meet at San Francisco, Cal., for the physical examination of officer of the Revenue Cutter Service—Surgeon J. M. Gassaway, chairman; Passed Assistant Surgeon M. J. Rosenau, and Assistant Surgeon W. M. Jordan, recorder.

Carter, H. R., Surgeon.—To represent Service at Quarantine Convention of South Atlantic and Gulf States.—February 7, 1898.

White, J. H., Passed Assistant Surgeon.—To represent Service at Quarantine Convention of South Atlantic and Gulf States.—February 7, 1898.

Wertenbaker, C. P., Passed Assistant Surgeon.—To proceed to Charlotte, N. C., for special temporary duty.—February 9, 1898.

Perry, J. C., Passed Assistant Surgeon.—Granted leave of absence for 14 days.—February 9, 1898.

Smith, A. C., Passed Assistant Surgeon.—To represent Service at Quarantine Convention of South Atlantic and Gulf States.—February 7, 1898.

Brown, B. W., Passed Assistant Surgeon.—Relieved from duty at Birmingham, Ala., and directed to rejoin station, Washington, D. C.—February 7, 1898.

Sawtelle, H. W., Surgeon.—Upon being relieved by Surgeon H. R. Carter, to proceed to Chicago, Ill., and assume command of Service.—February 17, 1898.

Austin, H. W., Surgeon.—To assume temporary charge of Quarantine Division in Bureau.—February 15, 1898.

Carter, H. R., Surgeon.—To rejoin station at Chicago, Ill., February 17, 1898. Relieved from duty at Chicago, Ill., and directed to proceed to New Orleans, La., and assume command of Service.—February 17, 1898.

Brooks, S. D., Passed Assistant Surgeon.—Relieved of command of Service at Port Townsend, Wash., and to remain in command of Port Townsend Quarantine.—February 17, 1898.

Perry, T. B., Passed Assistant Surgeon.—Upon being relieved by Passed Assistant Surgeon J. B. Stoner, to proceed to San Francisco, Cal, and report to Medical Officer in command for duty and assignment to quarters—Februrry 17, 1898.

Stoner, J. B., Passed Assistant Surgeon.—Upon being relieved by Surgeon H. W. Sawtelle, to proceed to Buffalo, N. Y., and assume command of Service.—February 17, 1898.

Wertenbaker, C. P., Passed Assistant Surgeon.—To proceed to Spartanburg, S. C., for special temporary duty.—February 14, 1898.

Perry, J. C., Passed Assistant Surgeon.—Upon being relieved by Passed Assistant Surgeon Rupert Blue, to proceed to Port Townsend, Wash., and assume command of Service.—February 17, 1898.

Brown, B. W., Passed Assistant Surgeon.—To proceed to Key West, Fla., and report to Medical Officer in command for special temporary duty.—February 15, 1898.

Blue, Rupert, Passed Assistant Surgeon.—Upon being relieved from duty at San Francisco Quarantine, to proceed to Portland, Ore., and assume command of Service.—February 17, 1898.

Oakley, J. H., Passed Assistant Surgeon.—To proceed to New Orleans, La., and report to Medical Officer in command for duty and assignment to quarters.—February 15, 1898.

Matheson, H. S., Assistant Surgeon.—Upon being relieved from duty at San Francisco, Cal., to proceed to San Francisco Quarantine and report to Medical Officer in command for duty and assignment to quarters.—February 17, 1898.

National Guard of Pennsylvania, First Brigade.

Major Joseph K. Weaver, Brigade Surgeon, will inspect the Hospital Corps of the First Brigade during the month of March.

First Lieutenant and Assistant Surgeon A. G. Thomson has been transferred from the Third Infantry to Battery A.

First Lieutenant and Assistant Surgeon Francis Patterson has been assigned to the Third Infantry.

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Original Articles.

CONTRIBUTION TO THE STUDY OF TOTAL NITROGEN AND URIC ACID EXCRETION IN TYPHOID FEVER.*

BY EDWIN B. BEHREND, M. D., and HARRY ADLER, M. D.

In this age when bacterial investigation has absorbed most of the energies of investigators in the scientific branches of medicine, and as a result great advances have been attained in therapeutics, the study of metabolism and its pathology have been relegated to the background. In the past few years, however, clinicians have resumed their researches on tissue changes in order to throw more light on the processes occurring in diseased organisms, processes hidden from our view, of which we know but the beginnings and the ends, while the intermediate stages intimately connected with cell life remain almost profound secrets. We depend very largely upon physiological chemistry for whatever knowledge we possess of these phenomena, and although many advances have been made in this science, the fact that it is still somewhat empirical, causes us to look forward with great eagerness to the future for a better knowledge and more refined technique in chemical analysis, to gain a clearer insight into cytological conditions. It is not possible for us to become intimately acquainted with them through microscopic inspection alone, for they are fundamentally molecular and consist in variations in chemical composition under the influence of the life energy. The pathological anatomist sees profound changes, for the most part changes resulting in affections of cells and intercellular substance, where the normal arrangement of parts to each other is disturbed, and as a self evident consequence the functions of the affected tissues are altered. But in physiological metabolism and pathological metabolism preceding organic changes visible to the naked or microscopic eye, the material conditions which we must of necessity assume to exist as fundamental, occur beyond the limits of our vision. Not entirely so, for the researches of Heidenhain, Ehrlich and others show that various cells do present certain differences associated with functional change. When we reflect, however, upon the great complexity with which

*Read before the Clinical Society, Washington, D. C., Jan. 10, 1898.

cells are endowed, the idea comes to us that we are but on the threshold of knowledge concerning their activity. For an instance, take the ovum, a single cell, consider all we know of its minute anatomy, then think of the changes resulting in it as a consequence of the action of biotic force, how it directs the arrangement of the various atoms in their proper places in the formation of the new individual. Think how these potentialities are bound up with the material structure of the cell and it must be confessed that the underlying factors of functional activity are still far beyond us. Since, therefore, anatomy gives us but little to go upon, in this study we must have recourse to the methods which have brought physiology to its present state, namely: the study of products of vital activity in relation to the functions producing them. Upon these comparatively rough and crude methods we must still rely for the present.

In research involving questions of metabolism a number of technicalities must be complied with to insure correctness in the drawing of conclusions. The individual to be experimented upon must be intelligent and willing to submit to the restraints which are necessary and to obey all orders with painful exactness, to report any indiscretion or unavoidable circumstance which might bear injuriously upon the work. He should be in some institution where his movements can be controlled, where the nursing force is trustworthy and careful, that all excretions are preserved after the manner prescribed. All food and drink taken by the individual must be carefully weighed and analyzed before it is ingested. From the excretions, portions are finally to be subjected to analytical procedures in order to determine in what manner the various food stuffs are utilized in their course through the body. It depends very largely upon the nature of the question which we wish to decide as to the more detailed manner in which a given investigation is to be done. In this paper, however, only such procedures as were deemed necessary for carrying out the work will be mentioned.

We shall now proceed to the consideration of the nitrogenous metabolism in typhoid fever with special reference to the relation subsisting between the total nitrogen excreted and uric acid. The heavy deposits of uric acid salts in the urine of fever patients, the so-called *sedimentum lateritium* which almost always appears about the time of the crisis, long ago aroused in the minds of physicians the idea that the uric acid elimination was changed from the normal. Bartels, the first one to undertake extended investigations on this subject, came to the conclusion as the result of his researches that, at the height of fever, the uric acid elimination was not increased, but that a very marked increase occurred at the end of diseases terminating by crisis; especially did he find this to be the case in pneumonia. Bartels, as a further result of his researches, promulgated the hypothesis that in general, increase of uric acid elimination depended upon a relative insufficiency of respiration which effected a lessened oxidation of the tissues, so that, as a consequence, a certain amount of proteid material instead of oxidizing to urea, only reached the stage of uric acid. Nowadays this hypothesis has been abandoned; still we call attention to the fact that a quarter of a century later von Jaksch gave a similar interpretation to the presence of the increased amount of uric acid in the blood, with a full recognition, however, of its possible derivation from the nucleins. In typhoid fever Bartels made three series of experiments, but in considering their value, it is necessary

to remember that he worked with the old method of Heintz, which as we now know always gives too small a result for the amount of uric acid present: even the precaution which Bartels employed of allowing the filtrate to stand forty-eight hours and then filtering, fails to give the total uric acid. Therefore we are justified, as von Noorden expressly emphasizes, only in drawing conclusions from the employment of this method if the amount found is very large. In considering the above we must say that the analyses of Bartels leave it an open question, whether there is an increased elimination, absolute or relative, of uric acid in typhoid fever; for notwithstanding the fact that his own conclusions led him to the belief that no increased elimination occurs, the tables themselves show a marked increase on many days during the febrile period.

From later investigators who worked with more exact methods, Salkowski, Ludwig, and Haycraft, we find the following statements: Baftolowsky found uric acid values of 0.88 gm after Haycraft and 0.6 gm after Ludwig in a case of typhoid fever at its height. As apparently only one day was selected for the experiment, the purpose of the investigation being merely the comparison of different analytical methods, the value of the figures above mentioned is lessened. Especially when we consider the frequent daily variations of the uric acid elimination in a single individual, it is only possible to arrive at a correct conclusion after examination of the urine for a number of consecutive days. Cario, determining the lithic acid in a case of typhoid fever by Salkowski's method, found it increased both absolutely and relatively. Nothing more definite is given in his report. Robin found an excess of uric acid except in cases ending fatally. Otto Gerdes, in an inaugural dissertation, records the results of a number of careful total nitrogen and uric acid determinations in a number of fever patients including one suffering from enteric fever. In this one he found values which must be considered rather high. The percentage relation, however, of uric acid nitrogen to total nitrogen was a variable one. With defervescence the absolute values of both were very high; double the quantity and more was found during the period of fever. At the same time there was more uric acid excreted, relatively speaking, so that the highest percentage relation occurred during the first three or four days of normal temperature. In parenthesis we may add that Gerdes found a similar result in his pneumonia cases. Unfortunately the statements made by Gerdes concerning typhoid fever cannot be accepted without further confirmation. He himself observes that the facts are not entirely indisputable inasmuch as his patient had a number of involuntary evacuations of both fæces and urine. It is therefore possible that both the absolute and relative values are incorrect.

P. F. Richter studied the relation between the uric acid excretion and number of leucocytes in the blood in various diseases. According to Horbacewzki there is a direct connection between the number of leucocytes in the blood and the amount of uric acid eliminated. In typhoid fever as is well known the number of leucocytes is usually diminished, and it would appear from the view held by Horbacewzki that the uric acid would occur in lessened amount in the urine. The experiments of Richter were carried out on two patients. The results were that the uric acid was not at all diminished in amount, but in fact was found to be greater than the normal excretion in health.

Owing to the small number of observations on the nitrogenous metabolism

in typhoid fever, Professor von Jaksch asked us to examine the urine of five cases in his wards in the General Hospital at Prague, in order to add to the knowledge on this subject. The patients were all young men between the ages of 14 and 20 years, of medium stature and muscular development. In all the cases except one the blood gave a marked Widal reaction, and there was no doubt of the nature of the disease in any one of them. They all presented a rather mild course.

For the determination of the nitrogen we employed the method first used by Kjeldahl, while for the uric acid we made use of von Jaksch's modification of Hopkins' test. The total nitrogen is found in the following manner. Five c c of urine are brought into an oxidation flask of glass consisting of an elliptical body and long narrow neck ten inches in length. To the urine are added 10 gm potas. sulph., 5 gm Cu SO4, and 15 c c concentrated C. P. sulphuric acid. The purpose of these ingredients is to assist the oxidation, which is carried on over the free flame of a Bunsen burner until the resulting fluid becomes entirely clear and of a pale blue or greenish color. The nitrogen which is given off as ammonia combines with the excess of H_2 SO4 present, and is held in the form of sulphate of ammonium. After the liquid has cooled, it is poured into a litre Florence flask, the oxidation flask being carefully rinsed out and the wash water added to the solution in the Florence flask. Then 120 c c of a solution of potassium sulphide and caustic soda is added and the flask brought into immediate connection with a distilling apparatus. The receiver contains a measured amount of ¼ normal sulphuric acid, in which the ammonia liberated in the distillation is taken up. After this process is finished, the contents of the receiver are titrated with a ¼ normal sod. hydroxid solution, litmus or phenolphthalein being used as an indicator.

The number of c c of ¼ normal NaOH multiplied by 0.0035 gives the amount of nitrogen in 5 c c of urine, from which the amount in the 24 hours can be readily ascertained.

The determination of uric acid is as follows. One hundred c c of urine are poured into a beaker glass to which 30 gm of C. P. ammonium chloride are added and the mixture allowed to stand for 24 hours. The uric acid is precipitated as ammonium bi-urate. The mixture is then filtered through a small glass funnel and the precipitate washed a few times with small quantities of a saturated solution of ammonium chloride. Then the filter paper is punctured and the precipitate washed off into a porcelain dish with boiling water in which the urate of ammonium dissolves. To the solution is added 5 c c of a 25 per cent solution of HCl and the entire liquid is evaporated to about half the quantity. The uric acid crystallizes out in the usual characteristic forms. From this point various modifications are introduced to make the quantitative determination. Hopkins dissolves the uric acid in a solution of bicarbonate of soda, adds sulphuric acid, and titrates with a 1-20 normal potassium permanganate solution. Von Jaksch brings the crystals of the acid on a filter of known weight, and weighing the difference between the result found and the weight of the filter, gives the amount of uric acid in 100 c c of urine. A third method is to determine the nitrogen in the uric acid by Kjeldahl's procedure, and multiplying by 3.

Owing to the number of steps involved in carrying out these experiments, two determinations were made in every instance side by side as a check on

each other and to assure a greater degree of accuracy. The urine was collected with the greatest possible care and no loss was experienced through involuntary evacuations. The nitrogen in the fæces was not estimated, inasmuch as the question to be decided referred particularly to metabolic processes in the body itself. The nitrogen of the fæces has its origin chiefly in the waste of the nutritive substances ingested and can, therefore, be neglected. The same nourishment was given to all the patients, and consisted of nothing but milk of which 2 litres were given daily. Cognac to the amount of 100 gm was the only medical treatment. No antipyretic treatment of any form was employed, so that we dealt with cases which ran practically an uninfluenced course. It may be objected that the cognac may have had some effect in the metabolism, but when we consider that alcohol acts in the direction of saving albuminous tissue waste, its effect, as seen from the tables prepared, is not very marked. We will now proceed to a consideration of the individual cases.

Case 1. The observations were carried out for seven days. The temperature ranged between 38 and 39 4°C. The total nitrogenous excretion remained fairly constant, not entirely so, the values running between 18 and 21 gm per day. The amount of uric acid excreted was between 0.48 and 0.68 gm. The percentage relation between uric acid and nitrogen and total nitrogen hovered in the neighborhood of 1 per cent.

Case 2. This case presented an analogous picture. Here, however, the absolute values for the total nitrogen varied much more, but the relational value between uric acid, nitrogen and total nitrogen was constant. On the last fever day, which coincided with the last day of observation, the percentage relation rose to 1½ per cent. Unfortunately further examinations during convalescence were not made.

Case 3. Here we again find ranging absolute values for nitrogen with constant percentage relation between the two factors investigated. We might call attention to the fact that the absolute values in this case were much less than in case 1, although the fever was no higher. On the last febrile day a remarkable increase in the total amount of uric acid occurred, which brought the percentage relation up to 4.10 per cent. The next day during which the temperature remained normal, the percentage relation was 2.01 per cent. During the febrile period, the highest figure noted was 1.5 per cent.

Case 4. This case presented almost the same phenomena as case 2. On the last febrile day the percentage relation rose to 2 per cent, from one ranging between 1.25 and 1.57 per cent, during the highest of the fever.

Case 5. In this case no difference could be observed during the febrile and afebrile days. The case is interesting inasmuch as we see here how with the fall of the temperature to normal the elimination of nitrogen is lessened, due without doubt to diminished consumption of tissue albumen.

If we compare these different cases we observe first, that the nitrogenous metabolism is as a whole very greatly increased above the normal, which coincides with one of the best observed facts in the metabolism of fever. The normal tendency is, as you are probably aware, for the body to set itself into nitrogenous equilibrium by excreting just as much nitrogen as is taken into it. In fever the digestive processes are lessened, and as a result not sufficient elimination

can be secured to satisfy the demand. Therefore the tissues themselves must break down in order to make up this deficiency. In addition to the deficit due to insufficient food, we have the factors of the continued high temperature and toxic principles which cause the tissue albumen to melt away. In all the cases above mentioned but 7 gm a day of nitrogen were taken in in the nourishment. In no case does the the nitrogen excretion fall as low as this figure. On the contrary, the values show an increase of from two to three times this amount—values which are much greater than would occur in normal individuals receiving the same food supply. In a number of instances Scheube's statement, that the uric acid values and those of total nitrogen rise and fall together, is confirmed. In the researches of von Noorden and Gerdes the constant percentage relation is not found, but the work of both authors is open to question as was stated above. We do not wish to be understood as making the statement that the two factors have an absolute fixed relation to each other, even though the percentage relations remain fairly constant. This must be evident in the independent increase in the the amount of uric acid excreted just before the afebrile or convalescent state is reached.

From all that has been said and from the literature on the subject we believe we may be justified in drawing the following conclusions:

1. That the nitrogenous metabolism as a whole is pathologically increased in typhoid fever;

2. That the uric acid secretion is not markedly changed from the normal;

3. That the percentage relation of uric acid nitrogen to total nitrogen is a constant one for the same individual during the febrile period;

4. That a marked increase in the absolute values of uric acid occurs at the termination of the fever;

5. That the uric acid and total nitrogen usually rise and fall together, but there does not appear to be an absolute fixed relation between them so that a change in one will be accompanied by a change in the other.

IMPERFORATE ANUS AND VAGINA.

By J. Ford Thompson, M. D.

In the afternoon of February 26, 1898, I was asked by Dr. Allen to see an infant which had been delivered by him about noon and which was afflicted with a congenital malformation of the rectum and vagina.

The mother was over forty years of age, had married late in life, and this was her first child. She had enjoyed good health during pregnancy and her labor was not difficult, though, being somewhat tedious, it was terminated by forceps.

The infant was otherwise well developed, but without anus or vagina. There was no depression or other indication of anus nor was there any bulging or other sign indicating the position of the blind rectal pouch. The vulva was peculiar in appearance and presented no vaginal opening. The labia majora were well developed in front and laterally, but shorter than normal, whilst the nymphæ were united and projected far beyond the labia majora. Careful inspection revealed a small fistulous opening near the upper end a little to one side of the middle line. There was also what appeared to be a clitoris under the anterior fourchette. The anus appeared

dry and nothing had passed through it. It was decided to operate at 11 o'clock the following morning.

Drs. Allen and Gill were present and assisted in the operation. The child had not suffered at all in the meantime and appeared to be in perfect health. Sufficient chloroform was administered to produce partial anæsthesia and the parts were again carefully examined. There had been no discharge whatever from the fistula. I succeeded in passing a probe which apparently entered the bladder. This was exchanged for a grooved director and then a slight amount of urine passed. The director was pressed towards the perineum and an incision about an inch long was made over the instrument. This incision was cautiously deepened until the end of the director was reached, when a large cavity or canal was disclosed, and it was difficult at first to determine whether I had opened into the bladder, vagina, or rectum.

The opening was soon sufficiently enlarged to permit the introduction of my finger when it at once became certain that the canal was the vagina. There was no meconium or other evidence of communication between the vagina and rectum. The incision was then extended further back towards the coccyx and the rectal pouch was opened as was at once evident from the immediate discharge of meconium. The external wound having been sufficiently enlarged, the rectal pouch was widely opened, its edges caught with forceps, and its detachment from surrounding parts accomplished without much difficulty. It was stitched with great care to the skin of the posterior angle of the wound with silk sutures, great care being taken to dissect the end of the rectum sufficiently to admit of apposition without traction. This was the most important part of the operation, for if the stitches were to give way there would surely be cicatricial contraction and a consequent operative failure. After this had been satisfactorily accomplished, the opening I had made in the vagina was closed for fear of urinary fistula, although there was little hope at the time of preventing it.

The little patient stood the operation remarkably well. The following day I saw her with Dr. Allen who had become fearful that the bladder might be distended as she had passed no urine since the operation. I inserted a grooved director and drew off about an ounce of urine and then slightly enlarged the urethral opening. The child has done remarkably well ever since. The sutures were removed on the eighth day with perfect union secured. The vagina is closed, the urethra is serving its purpose perfectly and the bowel movements are natural. In the course of a few years it will be necessary, of course, to do some plastic work in the region of vaginal outlet, and I see no reason why an almost perfect result may not be expected.

I have operated several times upon both male and female cases, but this is the first malformation of the kind I have seen, and I have not found a similar one in the hurried study I have made of the subject.

Brewer maintains that solutions of formaldehyde exert a pronounced germicidal effect when brought into contact with septic wounds, but have the disadvantage of producing considerable temporary pain. He employs this agent in the strength of 1 to 50 while the patient is under the anaesthetic, anticipating that the wound will be sterile at the first dressing, after which only plain sterilized gauze is used for packing.—*Medical Record, N. Y.*

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EDITED BY

GEORGE W. JOHNSTON, M. D., THOMAS E. MCARDLE, M. D.,

WITH THE CO-OPERATION OF

Charles E. Simon, M. D., Andrew Stewart, Ph. D., E. A. de Schweinitz, Ph.D., M. D.,

AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

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Notices and Reviews.

A TEXT BOOK ON SURGERY. By John A. Wyeth, M. D. New York, D. Appleton & Co., 1898.

When the first edition of this book appeared ten years ago the author called special attention to the recent introduction of cocaine and the more general adoption of the antiseptic method of treating wounds. Three years later, in a second edition, he lays emphasis upon the fact that he has embodied the latest accepted ideas of surgical septicæmia in the chapter on Inflammation and that he has added to the text the most recent and approved method of dealing with lesions of the abdominal viscera. The important advances in operative technique during the past seven years seem to have been the reason for the production of the third edition. A strange error has crept into the first page. The author says the original edition was published in 1886, whilst he gives the date April 20, 1887, at the end of his first preface. The first chapter considers the subject of inflammation and the process of repair in the tissues. This is the chapter which we always examine first when reviewing a new work on Surgery. Not long since we heard a discussion by two eminent surgeons before a prominent medical society on the subject of inflammation and repair. Apparently they were diametrically opposed to each other in their views, yet, if Dr. Wyeth's first chapter is correct, both these distinguished gentlemen were right and both were wrong, for the pages before us combine their views in one harmonious whole. The student will be on the safe side who holds as his own the surgical pathology of Wyeth.

In discussing erysipelas the author considers the prognosis so favorable that he advises artificial inoculation of this disease in certain cases of malignant neoplasm as in sarcoma, in which, he says, without any doubt cures have been effected by the institution of acute septic infection.

In the hypodermatic treatment of syphilis the only preparation of mercury mentioned is corrosive sublimate. Other forms of the same drug have found favor with many specialists.

Chapter twelve, on amputations, is well worthy of careful study. The author says that of the seven hip-joint operations he has performed by his own method he only lost one case. The patient died apparently from overstrain on the heart muscle. Dr. Wyeth very properly holds that in the effort to prevent loss of blood in an amputation it may not be always essential to success to force out all the blood that is in the

member to be sacrificed. A strain may be put upon the heart that will produce a serious result.

Chapter fifteen treats of the ligation of arteries, and the beautiful and correct illustrations are so thoroughly elucidated by the text that the subject will be easily grasped by the student.

Fractures and dislocations receive all the attention which they so well merit whilst diseases of the joints in general are illustrated and commented upon in a very thorough manner.

Commencing with chapter eighteen regional surgery is treated by so masterly a hand and the whole ground is so thoroughly covered in the twelve large chapters devoted exclusively to the different branches of this most important subject that this one volume fills the place of many special treatises. In that portion of this section in which the abdomen is considered, many important changes have been made and much new matter added. A mistake of the index refers to tuberculosis of the vulva page 855 which should be 854.

Chapter thirty treats of deformities. Osteoclasis, says the author, is objectionable when performed with the osteoclast, for the reason that the soft tissues are bruised to an extent which does not occur in osteotomy. Moreover, the line of fracture cannot be directed with the same accuracy as in cutting with the chisel.

One short chapter of twenty-three pages deals with tumors and completes a work which we heartily commend to student and practitioner.

M.

REPORT OF THE HEALTH OFFICER OF THE DISTRICT OF COLUMBIA. 1897.

This very valuable report is replete with interesting data and every physician in the District will be amply repaid for a careful study of its pages. During the year ending June 30, 1897, there were reported 5,737 deaths, of this number 1053, or nearly one-fifth, were due to the various forms of tuberculosis. In certain zymotic diseases the number of fatal cases shows an increase; thus, the deaths from diphtheria increased from 75 to 110, from whooping cough from 20 to 65, and from grippe from 53 to 118. But the fatal cases of measles diminished from 70 to 3, from scarlet fever from 13 to 1, from croup, so-called, from 9 to 6, from typhoid fever, including so-called typho-malarial fever, from 240 to 153, from malarial fever from 72 to 51, and from diarrhœal diseases from 468 to 358. Puerperal infection is credited with 34 deaths, whilst 68 women are said to have died in the puerperal state.

Altogether the most remarkable feature of the mortality tables is the unexpectedly low death rate in the alleys. For all alleys in the District of Columbia the death rate is 20.34, or somewhat lower than that for the District as a whole. While it has not been practicable to make corrections for deaths of alley residents which occurred in hospitals, it does not appear that such correction would materially alter the result.

The medical sanitary inspector makes his report of work done in the scarlet fever and diphtheria service. He claims a decrease in mortality from diphtheria of 5.6 per cent. due to the sequestration of the so-called "bacteriological" cases and to the use of diphtheria antitoxic serum. He adds, moreover, that bad sanitation, unhygienic surroundings, absence of sewers, and poverty do not favor the appearance of diphtheria and scarlet fever.

The chemist, J. D. Hird, makes several very instructive reports, especially one on the heating and ventilating of certain school buildings.

1009 doctors are registered at the health office. This gives them the right to practice medicine. The police census of March, 1897, showed a population of 277,782. One doctor to less than three hundred people. Comment is not necessary.

M.

THE YEAR BOOK OF TREATMENT. Cloth $1.50. Lea Brothers and Co. Phila. 1898.

For fourteen consecutive years the publishers have given to the profession a trustworthy and critical epitome of a year's progress in all branches of practical medicine.

The great value of the book can, perhaps, be best shown by an abstract from

its pages. One of the editors, Edmund Owen, M. B., F. R. C. S., Senior Surgeon to the Hospital for Sick Children, Great Ormond Street, London, thus writes: "To me, personally, statistics are hateful things; and when they are applied to surgical matters they are more than apt to be misleading, not to say untruthful. To the antitoxin statistician the case of the slight sore-throat from which the viscid mucus was brought which contained the guilty bacillus—the object of his search—was just as much 'diphtheria' as was a case in some other epidemic in which the child came under treatment with sloughing tonsils and toxæmic pallor. But, unfortunately, the compiler of statistics does not weigh his cases; he merely counts them. In these circumstances who can deem his method scientific or trustworthy? I certainly cannot. And sometimes, indeed, it appears to me as if the practitioner were, consciously or unconsciously, playing into the hands of the cold-blooded statistician by declining to give an antitoxin injection to a child who has diphtheria so severely that, in all probability, he is going to die from it, lest the death of the child should help to discredit the antitoxin. Surely no treatment could be established upon a sound basis if it stood in need of such mean support.

In what I have written, be it clearly noted, I have not said a word against a resort to the antitoxin treatment of diphtheria. Indeed, I adopt it myself and I urge its adoption by others; but, in the meanwhile, the practitioner should keep his mind open upon the question of the exact value of the treatment."

Every other article in the volume is written in the same careful and judicial manner. Why an American publishing house should have all British editors in compiling this year-book is something of a mystery. At any rate, no other set of medical authorities could have done better work.

M.

THE SURGICAL COMPLICATIONS AND SEQUELS OF TYPHOID FEVER. By William W. Keen, M. D., L. L. D., Philadelphia, 1898, W. B. Saunders, cloth, $3.00 net.

This very complete book is based upon a study of 1700 cases of typhoid fever attended by surgical complications or sequels. Some of these cases occurred in the author's own experience and some in the practice of his friends, their histories being now for the first time published; but the majority of the records are scattered throughout the literature of the past fifty years from which they have been gathered and collated partly by Dr. Keen and partly by Dr. Westcott.

Although typhoid fever, as the author points out, is considered a strictly medical disease it is nevertheless the cause of a number of the most serious surgical complications; in fact, of 2,000 fatal cases recorded by Hölscher, but 24 per cent. died solely as the result of the specific infection.

The author's views upon the pathology of the surgical complications and sequels of this affection have undergone some change during late years. In his well known Toner lecture he laid great stress upon the mechanical conditions and the presence of a clot as ætiological factors; and while it is apparent that they must be still regarded as operative in determining the site of the lesion, recent investigations, as he points out, have shown that the active agent is the bacillus of Eberth. This bacillus is of extraordinary viability and has been found widely scattered throughout the organism; and although it is seldom discovered in the blood, we must conclude that this is the means of its dissemination. While, as Dr. Keen shows, it has not been so far generally found in joints, in parotitis, otitis media and laryngeal lesions, and is frequently absent in other pathological conditions, it is, nevertheless, almost uniformly present in lesions of bone, in meningitis, abscesses and in the gall bladder and spleen. From this evidence and from the fact that this bacillus was discovered in pure culture in 63 out of 82 cases of suppuration of various kinds, we may fairly conclude that the micro-organism has distinctly pyogenic properties, and is

per se the active agent in producing all or nearly all of the surgical results of typhoid fever.

The author, in separate chapters, considers in detail the surgical complications and sequels of typhoid. He explains, for example, that in more than one-half of all cases of typhoid arthritis spontaneous dislocation occurs, which, in the case of the hip joint where this accident is most frequent, is due to the distention of the joint, and the consequent stretching of the ligaments, by the fluid accumulated therein, the slightest force, often simple muscular contractions, being sufficient to dislocate the head of the femur upward and backward on the dorsum of the ilium. He further describes, at length, typhoid affections of bones, next to the laryngeal, the most frequent of all complications. In 51 instances of this lesion pyogenic bacteria were found 13 times; in the remaining 38, typhoid bacilli were discovered; in 14 cases it is distinctly stated in pure culture. It is noteworthy that the first symptoms of osseous disease are usually noticed some time, often at long periods, after the subsidence of the fever; and the bacilli of Eberth have been discovered at the site of the lesion even many years after recovery from the typhoid attack.

Proceeding to a discussion of intestinal perforation in typhoid, the author reviews the complete statistics of Fitz and further cites 83 cases of this accident in which operation was performed, with a mortality of 80.64 per cent. Dr. Keen does not consider that this is the ultimate and unavoidable mortality of laparotomy after perforation. He believes that operative interference is likely to be followed by the most favorable results if undertaken in the second twelve hours after perforation, for then primary shock is over and peritoneal infection has not become general. The importance of the time element has been clearly shown by the fact that operations that have been performed between 12 and 24 hours after perforation have been followed by 30 per cent of recoveries, while after 24 hours the mortality is 100 per cent. Dr. Keen closes all openings in the gut with Halsted's mattress suture and wisely advises that all impending perforations be sutured also.

In a work so complete and satifactory in every respect it is difficult to single out any one feature for especial emphasis, but one must be struck with the abundant evidence that is brought forward to prove the immense importance of the bacterial element in the pathology of the affections under consideration. And it is made no less clear that we must watch our typhoid cases with the utmost care, and especially from the period of highest temperature until well into convalescence; for most of the sequels and complications are extremely insidious in their approach and are first likely to make their presence known at a time when complete and rapid recovery seems assured.

Dr. Keen's work is a serious study most ably prosecuted ; it is replete with information in itself and will serve as an immense incentive to further investigation especially of a bacteriological nature.

N. N. P.

Reprints and Pamphlets Received.

Tucker (W. G.) Note on diastatic preparations. Repr. Albany Medical Annals. March, 1898. Oliver (C. A.) Some of the inefficiences of the methods ordinarily employed by railway surgeons for the detection of subnormal color perception (color blindness). Repr. Annals of Ophthalmology, Oct., 1896. Also: A perfected series of test-type. Repr. International Medical Magazine, July, 1897. Also, Clinical history of a series of operative procedures for the cure of cicatricial ectropium from antral disease. Repr. University Medical Magazine, May, 1897. Wells (E. F.) Pulmonary tuberculosis—its diminishing prevalence. Repr. J. Am. Med. Ass., Feb. 8, 1896. Mason (W. P.) Sanitary problems connected with municipal water supply. Repr. J. Franklin Inst., May, 1897. Woodbridge (J. F.) Typhoid fever. Norwalk, O., 1897. Reed. (B.) Diet in the chronic catarrhs of the gastro-intestinal tract. Repr. J. Am. M. Ass., Feb. 19, 1898. Also: Massage of the abdomen. Rep. Internat. M. Mag., Jan. 15, 1898. Bulkley (L. D.) Notes on the non-surgical treatment of boils, carbuncles and felons. Repr. Brit. M. J., Oct. 2, 1897. Medical Libraries; C. D. Spivak, Ed., Denver, Colo., Feb. 1898, i. 1. Transactions Section of Ophthalmology, College of Physicians of Phila., Meeting Feb. 16, 1898. Bishop (S. S.) Clinical tests of new remedies. Repr. Laryngoscope, Jan, 1898, Also; Authors and the Journals. Repr. Larynoscope, Nov., 1897.

NEW BOOKS.—Messrs Lea Brothers & Co., announce for early publication the following books by eminent authorities.

A MANUAL OF OTOLOGY. By Gorham Bacon, A. M., M. D., Professor of Otology in University Medical College, New York. With an Introductory Chapter by Clarence J. Blake, M. D., Professor of Otology in Harvard Medical School, Boston, Mass.

THE TREATMENT OF SURGICAL PATIENTS BEFORE AND AFTER OPERATION. By Samuel M. Brickner, M. D., Visiting Surgeon at the Mt. Sinia Hospital, New York.

A TREATISE ON GYNECOLOGY. By E. C. Dudley, A. M., M. D.. Professor of Gynecology in the Chicago Medical College, Chicago.

The Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

On the Treatment of Colica Mucosa

von Noorden emphasizes the fact that this condition must be clearly distinguished from the ordinary inflammations of the intestinal tract associated with colic and the passage of mucus. Colica mucosa always occurs in individuals suffering from neurasthenia or hysteria. The patients may have several passages of mucus daily or they may have intervals of a week or more between the severe attacks. The mucus is passed in the form of flakes, long bands, or tubes forming casts of the intestine. The mucus differs in appearance from that usually found in inflammatory conditions. The bands or flakes contain less water and resemble typical membranes, tough and hard to tear. They are frequently mistaken for tapeworms. The passage of the membranes is always associated with severe pain, referred to the middle or left side of the abdomen. The pain occurs in the same place in all of the attacks. Patients are usually constipated before a paroxysm, and suffer diarrhœal discharges afterwards. During the attack the rectum is usually empty, the colon and sigmoid flexure filled with scybala. Frequently the colon may be felt through the abdominal wall as a thick, hard, but tender strand. In the intervals the patients are free from pain, and complain only of mild symptoms of dyspepsia. The view held by von Noorden and most of the authorities is that the condition is a neurosis of secretion and mobility of the intestine. The secretion of mucus is increased under the influence of the nervous system and is supposed to accumulate in the atonic or contracted intestine. Here it loses water and is converted into a membranous structure and is finally expelled by the peristalsis excited by its presence. Since the disease is a neurosis all the treatment has been directed towards the nervous system. von Noorden reviews the various methods of treatment, electricity, massage, hydrotherapy, etc., and states that they rarely succeeded in allaying the evil. More is to be expected from the injection of large amounts of oil into the rectum as practiced by Kussmaul and Sleiner. The author finds that although the patients are temporarily relieved by this method, as soon as it is stopped the trouble reappears. He calls attention to the fact that very little regard is had for the dietetic treatment and gives the result of his method, which he has employed for seven years. This differs considerably from the ordinary schemata, especially as far as diet is concerned. Acting upon the principle that the intestine in colica mucosa is intact, he makes use of a diet that is very coarse and contains a large amount of indigestible material. Bread rich in bran, all the seeded fruits, vegetables rich in cellulose and large quantities of fat form the basis of his dietary. The change from the ordinary soft diet that is usually taken by the patients, is made suddenly. Through this coarse food the capacity and peristalsis of the intestine is greatly increased. It is drilled by exercise to take on a more normal function. In addition to the diet, care is taken to obtain a daily evacuation of the bowels, rhubarb with sod. bicarb., being used for this purpose. If it does not avail, he extols enemata of oil 70—80 cmm. Increase in weight of patients is to be attained with fats rather than carbohydrates. He warns against the use of Carlsbad salts and makes it a practice to send his patients to Kissingen or Homburg after his treatment, in the lines mentioned above, is carried out. He has had 23 cases, 15 of which he was able to follow. The results of his method in these cases were as follows. In one, no result. In three cases the attacks became milder and occurred at longer intervals. Four cases were completely cured for from 3-6 months after which relapse occurred. Seven cases were completely cured and the cures are now of

from 3-5 years standing. The author believes the above to be an excellent result when the obstinacy and chronicity of this very painful and disagreeable disease are considered. von Noorden (C.) Ueber die Behandlung der Colica mucosa. Zeitschr. f. prakt. Aerzte, Frankf., 1898, vii, 1.

The Passage of Foreign Bodies from the Bladder to the Kidneys and to remote Portions of the Organism.

Lewin calls attention to the fact that he and Goldschmidt in October, 1897, showed that fluid could pass from the normal bladder into the ureter and from thence into the pelvis of the kidney, a fact contrary to the usually accepted opinions on the subject. The fluid used in experimentation was a solution of methylene blue. Its further disposition after reaching the pelvis of the kidney was not studied. The present article describes the elaboration of the work first reported by the above mentioned authors. The experiments performed were for the purpose of obtaining answers to the following questions: 1. Can solid bodies pass from the bladder into the kidneys soon after their introduction into the former viscus, and if so, under what conditions of pressure; 2. do foreign bodies, fluid or solid, pass from the pelvis of the kidney into the kidney itself; 3. is it possible for such foreign bodies to get from the kidneys into the general circulation? The fluid used as an injection was a mixture of green or blue ultramarin in gum arabic and water, and was of a character that did not interfere with subsequent microscopical manipulations. The results of the various experiments showed: 1. In whatever manner the experiments were carried out the coloring matter and diatoms (which were also employed) were always found in the pelvis of the kidney after injection into the bladder. This was found to be the case under whatever degree of intra-vesical pressure. 2. It was found further that the coloring matter and diatoms appeared in the collecting ducts of the kidney, the blood vessels and in the lymphatic spaces. The entrance of the particles is due to heightened pressure within the pelvis of the kidney and takes place in the following order: (a) collecting ducts, (b) lymph spaces and (c) blood vessels. 3. The appearance in the blood vessels of the coloring matter employed gave rise to the inference that it might be found in various distant parts of the body. As a matter of fact particles of foreign substances were found in the renal veins after injection into the bladder, also in the heart, lungs and liver. These experiments give a positive basis for the explanation of secondary changes occurring in various parts of the body whose primary origin was assumed to be in the bladder. These investigations show that there must be a natural communication between the bladder and the heart, which under certain conditions permits of the passage of foreign matter in a direction contrary to what we are accustomed to see under normal conditions. The investigators point out, moreover, the manner in which pathogenic organisms can gain access to the general system from the bladder, and throw considerable light upon the origin of general infectious processes.—Lewin (L.) Der Uebertritt von festen Körper aus der Blase in die Nieren und entfernten Körper Organe. Deutsch. med. Wchnschr., Leipz. u. Berl., 1897, xxiii, 825.

The Treatment of Nervous Disease by Movement.

Goldscheider has treated a number of cases of tabes by Fraenkel's method which consists in re-educating the muscles by exercise to respond to nervous impulses. He describes an apparatus which he employs for the purpose. He finds that considerable improvement takes place in cases which come under treatment early and even that advanced cases are benefited. The exercises must be carried out even after the patients have become proficient in the movements learned, for they are very quickly forgotten. Although the march of the disease is not stayed, still it runs a more protracted course. Goldscheider. Ueber Bewegungs Therapie bei Erkrankungen der Nerven Systems. Deutsch. med. Wchnschr., Leipz. u. Berl., 1898, xxiv, 50; 69.

Methylene Blue in the Treatment of Diabetes Mellitus.

De Estay has used methylene blue in several cases of diabetes with striking results, the glycosuria, polyuria, and in consequence, the polydipsia disappearing completely under this treatment. He details the case of a man of 53 years who complained of severe headaches, malaise and excessive thirst. The urine showed, besides sugar, albumin amounting to 0.04 gm per litre. Treatment was begun with 0.5 gm methylene blue per day. The albumin was reduced to a mere trace, and the sugar lessened from 60 gm per litre to one third of that amount in eight days, disappearing almost completely after five weeks treatment. In a second case the sugar fell from 30 gm to 5 gm per litre after a month's treatment consisting of 4 pills daily of 0.10 gm each. In view of the remarkable reduction of the sugar in these cases further trial of this remedy is surely indicated.—De Estay. Le bleu methylène dans le traitement du diabète sucré. La méd. mod., Par., 1898, ix,53.

The Treatment of Pulmonary Tuberculosis.

von Ziemssen discusses the two chief methods employed in the treatment of this malady, 1. specific and 2. climatic and dietetic. He looks upon all the methods of specific treatment which have been tried up to the present time as failures. He speaks, however, very enthusiastically of the results attained by subjecting tubercular subjects to the influence of pure air. The value of the latter is universally recognized by all physicians, and the differences of opinion that have arisen refer to whether the rarified air of mountainous districts is to be preferred to the southern climate and air at sea level. The author enumerates the advantages and disadvantages of each. The value of mountainous air is that it is dry and clear, the sun's rays in high altitudes are more powerful, there is little fog and the winds are not very strong. Among the drawbacks he mentions the fact that some patients find it difficult to become acclimated and get worse, the wearisome journeys necessary, the separation from home and family and the attendant expense. He believes that all the advantages of pure air treatment can be attained in properly erected sanatoria in the homes of tuberculous individuals, and quotes statistics from various institutions showing that as good results may be had at the sea level as in the mountains. He concludes his remarks with the assertion that in the physical-dietetic-pure-air treatment in well regulated institutions we are to find the cure for the tuberculous. In this plan of treatment, he says, lies the success of the future.—Ueber die Behandlung der Lungentuberculose. von Ziemssen (H.) Muench. med. Wchnschr., 1898, xlv, 1.

The So-Called Cancer Bodies.

Busquest draws attention to the two views held regarding the so-called cancer bodies, and concludes from investigations carried out by him in the zoologic laboratory of Prof. Künstler, at Bordeaux, that the inclusions which he has studied possess an enveloping membrane, a protoplasmic body and a nucleus. These structures are clearly to be distinguished from one another, and present all the attributes of a living cell free from all signs of degeneration. He concludes that there exist in certain cancers, especially in epitheliomata, definite elements distinct from the epithelial components but included in them, which are not the products of degeneration. Busquest (M. P.) Contribution a l'étude de la structure fine des corps appelés "Les Sporozoaires du Cancer." Compt. rend. soc. de biol., Par., 1897, 10. S. iv. 1023.

Methylene Blue in the Treatment of Gonorrhœa.

This remedy was tried by Dr. Orville Horwitz in 105 cases of specific urethritis. Merck's preparation was employed in doses of from one to two grains. Any tendency of the larger dose to produce diarrhœa and strangury was lessened by the addition of nutmeg. In most of the cases the purulent discharge was changed to a slight mucoid excretion with an abatement of inflammatory symptoms in four or five days. Philadelphia Polyclinic, 1898, vii, 1898; 113.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF

CHARLES E. SIMON, M. D.

AND

ANDREW STEWART, PH. D.

Digestive Leucocytosis in Carcinoma of the Stomach.

In a series of carefully conducted experiments, Hoffmann inquires more closely into the correctness of Schneyer's assertion that a digestive hyperleucocytosis is uniformly absent in cases of carcinoma of the stomach, in contradistinction to benign pyloric stenosis and ulcer. His results may be summarized as follows: In twenty-four cases of carcinoma which he examined, a digestive hyperleucocytosis was not observed in the great majority of cases, it is true; in one, however, a very marked increase was observed, and in another a slight increase at least. In his nine cases of ulcer a digestive hyperleucocytosis was only found in two. It may in fact be absent in the most diverse diseases of the stomach and occur quite irregularly even in the most severe forms. Why hyperleucocytosis should occur in one case and not in another is as yet an open question. So much, however, appears to be certain that the mere absence of free hydrochloric acid and the cachexia alone do not enter into consideration as causative factors. In order to establish the existence of a digestive hyperleucocytosis, Hoffmann demands an increase of at least 1500 leucocytes pro cubic millimeter. The test meal in his cases usually consisted of 1000 c. c. of milk and two eggs, *in maximo*, and 200 c. c. of milk and one egg *in minimo*, according to the condition of the patient. In every case the meal was preceded by a fast of seventeen hours. The leucocytes were counted immediately before the administration of the meal, and at intervals of one, two and three hours thereafter. Hoffmann, (A.) Zeitschr. f. klin. Med., 1897, xxxiii, 460.

C. E. S.

Enumeration of the Leucocytes as a Diagnostic Aid in Certain Well-Known Diseases.

The paper of Dr. George Herschell, on the above subject, is of value to all general practitioners desirous of extending the range of ordinary diagnosis. In the counting of white corpuscles, Dr. Herschell recommends the Thoma-Zeiss instrument, using 0.33 per cent acetic acid as a diluent. This brings out the white cells, while the reds are destroyed. He describes an original, ingenious and rapid method of counting, using a diaphragm introduced into the microscope. After outlining briefly what is known of the number and kinds of leucocytes in health, the writer goes on to describe the variation in their number in certain well-known diseased conditions, bringing out clearly how such data may avail for the purposes of diagnosis. Leucocytosis, or the increase in the white cells in their proportion to the reds, in the peripheral capillaries, Dr. Herschell divides into two classes: 1. Digestive, or normal leucocytosis (occurring after a meal) and 2. Permanent, or pathological leucocytosis. The second sort may be produced by hemorrhage (following in an hour or two, and persisting 1-3 days); inflammation (present in all inflammatory conditions, slight when localized, severe when diffuse) and toxæmia. It follows the injection of certain organic extracts, and is present in all acute infectious fevers except typhoid, influenza and rœtheln. It is absent in malaria and all forms of tubercle. Follows certain affections due to some toxic agent, as gout, acute yellow atrophy, &c.

Diseases of the Stomach and Leucocytosis. The diseases of the stomach most commonly met with are: ulcer, carcinoma, acute gastritis, chronic gastritis and functional derangements of motor

power and sensibility. In the following table are included most of the first, regarding leucocytosis :

Leucocytosis.	*None.*
Acute gastritis;	Typhoid fever;
Hyperchlorhydria;	Ulcer;
Malignant ulcer;	Chronic gastritis;
(no digestive leuc.)	(with atrophy of stom. tissue)
	Simple atonic dilatation.
	(digest. leuc. delayed.)

It will be seen that diagnoses between typhoid fever and acute gastritis ; ulcer and hyperchlorhydria ; malignant and non-malignant ulcer ; cancer and advanced chronic gastritis, may be made, according to these facts, as set forth by Dr. Herschell. In regard to the liver, the grade of leucocytosis throws much valuable light on jaundice and suspected passing of gall stones. The most important aid which an enumeration of the leucocytes renders in affections of the intestines is in distinguishing between appendicitis and typhoid fever. In the former there is a leucocytosis, in the latter affection there is none. In a severe case of appendicitis, diagnosed with certainty by ordinary clinical means, the absence of leucocytosis is a bad omen, and a leucocytosis increasing from day to day (after the first two or three days) or a considerable leucocytosis persisting unchanged for several days, the patient otherwise doing well (pointing to a large pus formation shut off from the peritoneal cavity) shows that the disease is spreading and that an immediate operation is indicated. Clin. Journ., Lond., 1898, xi, 188.

A. S.

The Iodine Reaction in the Blood.

M. Goldberger and S. Weiss have demonstrated that the iodine reaction indicates a suppurative process. In cases of progressing or active suppuration, the leucocytes stain brown with the Ehrlich iodine mucilage test; iodine sublimate, 1 part; potassium iodide, 3 parts; aqua destillata, 100 parts ; gum arabic, q. s. ad. consist. syrup. The polymorphonuclear neutrophils are most exclusively affected, and the intensity depends upon the rapidity of the abscess formation. The reaction disappears after incision and as the abscess becomes cold. The test is not reliable when there is concomitant pneumonic infiltration or after prolonged narcosis. Goldberger (M.) and Weiss (S.) Wien. klin. Wchnschr. *Abstr.*, Microscopical Bulletin, 1897.

A. W.

The Blood in Trichinosis.

Dr. R. C. Cabot reports a case of supposed malaria in which he was consulted. An examination disclosed no malarial parasites, but a differential count of the leucocytes discovered 27 per cent of eosinophiles. This, reminding him of two cases reported from the Johns Hopkins Hospital, led to a diagnosis of trichinosis. The points of particular interest in the two cases referred to were : Case 1. Leucocytosis 17,700; eosinophiles 68 per cent ; muscular pain and soreness in particular spots ; excision of muscle, trichinæ. Case 2. Chills, fever, headache, backache, anorexia and weakness, and edema about the eyes. The spleen was slightly enlarged, no diazo-reaction in urine, few rose spots apparent on abdomen. Case was supposed to be malaria, but no plasmodium was found. Leucocyte count 13,000 with marked eosinophilia. Cabot (R. C.) Boston, M. & S. J., 1897, cxxxvii, 676.

A. S.

On the Haematozoan Infection of Birds.

In a paper read before the British Association for the Advancement of Science, Aug., 1897, MacCallum confirms the distinctions, pointed out by Opie in 1896-7, of two forms of adult examples of the Helteridium of Labbé (as they occur in crows in Ontario). A hyaline, non staining form, and a granular form taking on a comparitively dark stain with methylene blue. The hyaline form alone becomes flagellated, the granular forms being extruded and lying quiet as spheres beside the free nuclei of the red corpuscles which contained them. The flagella of the flagellated forms tear themselves free, constitute themselves fertilizing agents or spermatozoa, and proceeding directly to

the granular sphere, wriggle about it. One only of these gains admission, and plunges itself into the sphere, which after some agitation of the pigment becomes quiet for a period of fifteen or twenty-five minutes, after which it puts out a conical process, which grows and draws the protoplasm into itself, until we finally have the fusiform body with a small pigmented appendage and refractive nucleus-like body, such as was described by Danilewsky as a "Vermiculus." The vermiculus moves actively and has great powers of penetration by means of its pointed anterior end, with which it breaks up the red corpuscles in its path, and it is thought that possibly it may penetrate the intestinal wall and escape as the resistent form which gains the external world. This idea is supported by finding of free organisms in the mucous contents of the intestine. In the blood of a woman suffering from an infection with the aestivo-autumnal type of organism, in which a great number of crescents were to be seen, these, with very few exceptions, retained their crescentic shape for only a few minutes. They soon drew themselves up, thus straightening out the curve of the crescent while shortening themselves into the well-known ovoid form. After a lapse of 10 to 12 minutes most of them were quite round and extra-corpuscular, the "bib" lying beside them as a delicate circle or "shadow" of the red corpuscle. After 20 to 25 minutes certain ones of these spherical forms became flagellated; others, and especially those in which the pigment formed a definite ring and was not diffused throughout the organism, remained quiet and did not become flagellated. The flagella broke from the flagellated form and struggled about among the corpuscles, finally approaching the quiet spherical form; one of them entered, agitating the pigment greatly, sometimes spinning the ring about. The rest were refused admission, but swarmed about, beating their heads against the wall of the organism. This occurred after 35 to 45 minutes. After the entrance of the flagellum the organism again became quiet and rather swollen, but although in two instances in which this process was traced the fertilized form was watched for a long time, no form analogous to the "vermiculus" was seen. This is evidently for the human being what was foreshadowed by the organism of the bird. MacCallum (W. G.) *Abstr.* Johns Hopkins Bulletin, Nov., 1897.

A. W.

Th resence of Free Granules in the Blood.

Inspired by the observation of Müller, Wm. Royal Stokes, M. D., and Arthur Wegefarth, M. D., have conducted a series of experiments, and published the results in the Johns Hopkins Hospital Bulletin for Dec., 1897, under the title: "The Presence in the Blood of Free Granules Derived from Leucocytes, and their Possible Relation to Immunity."

The bodies observed correspond in their general appearance to those described by Müller, especially emphasizing the fact that the granules vary in size. They exhibit molecular movements but no independent motility. They were demonstrated in the blood of five hundred persons. In specimens of blood exposed to 35° C. for an hour or more the granular leucocytes became actively amœboid, and the granules exhibit characteristic activity, the number of free granules in the plasma being perceptibly increased. The authors think that they have seen the granules leave the leucocyte. They do not agree with Müller who thinks that the granules are not derived from the neutrophilic leucocytes, since Ehrlich's granules are dissolved by dilute acetic acid, because, according to their observations, dilute solutions of glacial acetic acid cause a great increase in the number of granules free in the plasma when added in equal parts to fresh blood. They found the granules in the blood of the horse, rabbit, cat, guinea-pig and rat. Their observations indicate that granules derived from leucocytes appear free in the blood. They performed experiments seeming to show that the leucocytes are directly concerned in furnishing a definite amount of bactericidal material. Their experiments were performed with serum from dog's and rabbit's blood. Their first experiments

demonstrated a decided difference between the undiluted serum of dog's and rabbit's blood before and after filtration. They concluded that filtration of the undiluted blood serum of rabbits and dogs removes their normal property of causing the agglutination and cessation of motility of the organisms tested. They next endeavored to ascertain whether there was any demostrable difference in the capacity of the filtered and unfiltered serum actually to destroy bacteria. They demonstrated that while unfiltered rabbit's serum will completely destroy such organisms as the typhoid bacillus and the spirillum of cholera and Finkler-Prior, these same bacteria will increase enormously in filtered serum. Practically the same results were had with dog's serum. They next endeavored to restore the lost property by adding the leucocytes to the filtered serum with the result that the presence of the sediment, consisting of granules, leucocytes, and red blood corpuscles in the filtered serum, rendered this fluid capable of inhibiting the growth of large numbers of bacteria, although incapable of preventing the subsequent development of bacteria in this fluid.

Conclusions: "In the blood plasma and serum of man and many of the lower animals there are present varying numbers of granules, which resemble the granules of the eosinophilic and neutrophilic leucocytes in size and appearance. After the addition of dilute acids, dilute alcohol, etc., and subjection to body temperature, the granules of the leucocytes assume marked activity, and such treatment increases the number of granules present in these fluids. These free granules are almost certainly derived from the granular leucocytes. The filtration of the serum of the dog and rabbit through new Müncke porcelain cylinders removes its normal property of causing the agglutination and cessation of motility of many pathogenic bacteria, and of destroying large numbers of these organisms. This property can be partially restored by adding a sediment consisting of leucocytes, free granules and red blood corpuscles. Since the red corpuscles are not germicidal (Bucheer), it follows that the restoration of the bactericidal property is due to the addition of the leucocytes and free granules, and that these cells can furnish a germicidal material."

Their own experience and other suggestive facts lead them to advance the following theory: The bacterial power of the leucocyte of the blood, and of the serum of man and many animals, is due to the presence of specific granules, especially the eosinophilic and neutrophilic. When called upon to resist the action of bacteria, the granular leucocytes can give up their granules to the surrounding fluids or tissues. Not only does this enable us to understand how apparently cell-free fluids can destroy bacteria, but the production of the alexin by the leucocytes also affords a better explanation of the hyperleucocytosis of infection so strongly urged by Metchnikoff, and by no means disproves the supposition that the leucocytes can take up bacteria either while alive or after being destroyed by means of the germicidal granules.

A. W.

The Origin of the Indican of the Urine.

Dr. C. A. Herter has performed some very interesting experiments on a number of dogs to demonstrate that the indican of the urine has its origin in the activity of the bacterium coli communis in the intestine. From the facts he brings out, the following inferences may be drawn: Indican and ethereal sulphates were increased in the urine (of the dogs) by the introduction of the common colon bacterium into the intestine. The introduction of proteus vulgaris may increase the ethereal sulphates without increasing the indican. The introduction of the lactic acid germ produces a reduction of the indican of the urine, together with the ethereal sulphates. This last is interesting in connection with the fact that a bread and milk diet often greatly reduces the output of indican in the course of intestinal derangements. Brit. Med. Jour., Lond., 1897, ii, 1847-1849.

A. S.

The Biuret Reaction in the Urine.

Dr. H. B. J. Stokvis maintains that the biuret reaction in human urine may be due to the presence of urobilin. He questions the presence of peptone in

many reported cases of peptonuria. Zeitschr. f. Biol., Muenchen u. Leipz., 1897, n. F., xvi, 466.

A. S.

Albumose in the Urine.

Dr. W. K. Fyffe maintains that albumose is formed in the course of rapid proteid digestion, occupying a stage intermediate between albumin, on the one side, and peptone on the other. He believes that albumose is a partially hydrolyzed albumin, peptone representing the end process. What used to be reported as peptonuria, he is sure was, in reality, albumosuria, as the test heretofore employed in detecting the so-called peptone (biuret test) also gives positive reaction with albumose. He recognized three modifications of albumose: Proto, deutero, and hetero albumose, of which proto is the rarest and deutero the most common. Just at present he sees no need for distinguishing them in diagnosis. Albumose may be tested for in two ways: I. The biuret reaction—To sat. sol. potash add very little amt. 2 per cent. sol. $CuSO_4$, till slight tinge of blue is imparted. Pour urine into tall glass and run in the potash sol. carefully. At point of contact there will be formed a pink color inside of 5 minutes. Very delicate. Peptone responds to this test. II. A differential test from peptone. Similar to Heller's test, performed with cold dilute nitric acid. A ring forms in the presence of albumin or albumose, when due to the latter it disappears on heating to reappear when the temperature falls. Peptone does not respond to this test, but is alone precipitated, after neutralizing the urine, on saturation with ammonium sulphate. Albumose is present in the urine in—phthisis, particularly where there is much breaking down of lung tissue; acute rheumatism, particularly where the disease is acute and the temp. very high; ulcerative endocarditis, particularly on injection of anti-streptococcic serum; uræmia, invariably in convulsions, and the eclampsia of pregnancy; diphtheria, where antitoxin has been injected. The pathological significance of albumose is as yet obscure. Its presence may, however, be regarded as a danger signal, warning that severe tissue changes are in progress. Australas, M. Gaz., Sidney, 1897, xvi, 239-242.

A. S.

Nucleo-Histon in the Urine of Pseudo-Leukaemia.

The observation of Jolles that nucleo-histon may occur in the urine is certainly most interesting, but not altogether surprising, since Kolisch and Burian (Zeitschr. f. klin. Med., 1896, xxix, 374.) succeeded in demonstrating that one of its decomposition products—histon—may likewise occur in the urine under certain conditions. In the present case attention was drawn to the presence of the body by the occurrence of an intense cloud when the urine was treated with acetic acid. The supposition that the body in question was nucleo-histon was further strengthened by the discovery that the precipitate yielded a relatively well pronounced phosphorus reaction, and that the substance could not be precipitated with magnesium sulphate. For its isolation the following method is suggested: 500–1000 c. c., of urine (according to the intensity of the acetic acid reaction) are kept upon the water-bath at a temperature of 60–70° C. for fifteen minutes. The filtrate is received in a separating funnel, povided with a ground glass stopper, treated cautiously with acetic acid, so as to avoid an excess, and shaken with a little Kieselguhr, in order to insure a more rapid and complete sedimentation of the precipitate. This is then collected upon a small filter, placed together with the filter in an Erlenmeyer's flask, treated with a dilute solution of sodium hydrate (about 4 per cent.), and filtered. The filtrate which contains the nucleo-histon is again treated with acetic acid, the precipitate again dissolved in dilute sodium hydrate solution, and the process further repeated two or three times, in order to obtain the body in as pure form as possible. In the final filtrate the nucleo-histon is once more precipitated with acetic acid, and the mixture thoroughly shaken with an equal volume of absolute alcohol. The precipitate collects at the bottom of the vessel after a relatively short time, and is then placed on a small filter, washed with warm alco-

hol and cold ether, dried in the dessicator and finally kept at a temperature of 100° C. until a constant weight is obtained. In the substance thus isolated, the presence of phosphorus may be demonstrated as follows: A certain amount of the substance is placed in a crucible, covered with a mixture of two parts of sodium nitrate, and one part of sodium carbonate, incinerated, the phosphoric acid precipitated with ammonium molybdate, and the yellow precipitate dissolved upon a filter with a solution of hot ammonia (1:3). The solution thus obtained is approximately neutralized with hydrochloric acid, allowed to cool, when the phosphoric acid is precipitated with magnesia mixture and determined as magnesium pyrophosphate.

Pure nucleo-histon according to Lilienfeld contains on the average 3.025 per cent. of P. The figures obtained by Jolles were 3.14 and 3.25 per cent.

In order to demonstrate the histon-radicle in the albuminous body obtained, the purified substance is digested for several hours with a 1 per cent. solution of hydrochloric acid. One portion of the filtrate is then treated with ammonia, when in the presence of histon a cloud develops, which, upon shaking, soon settles, to the bottom, as a flaky precipitate. Another portion of the filtrate, when treated with sodium hydrate and copper sulphate solution, should yield the biuret reaction. The body, moreover, is coagulated by heat, and the coagulum is soluble in mineral acids.

The blood in this case showed only a moderate grade of hyperleucocytosis, viz: 13,500, and it is a question whether the nucleo-histonuria should be explained by the assumption that the leucocytes enter the blood prematurely, and are hence broken down more readily, or whether it might be referable to certain circulatory disturbances in the kidneys.

In the same article Jolles points out that the statement is usually made in text-books on Urinary Analysis that nucleoalbumin is a constituent of normal urine, and constantly present. He opposes this statement most emphatically. According to his experience the substance is never present in normal urine, and is only exceptionally found under pathologic conditions. He found it in several cases of leukæmia, in one case of typhoid fever, in two cases of icterus gravis and in three cases of chronic nephritis. Jolles, (A.) On the occurrence and demonstration of the presence of nucleo-histon in the urine of a case of pseudo-leukæmia. Zeitschr. f. klin. Med., 1898, xxxiv, 53. C. E. S.

Streptococcus Sanguinis Canis.

Pitfield describes a coccus, occurring often singly and occasionally in pairs, found swimming actively in the plasma of the blood of dogs affected with distemper. Cultivated, the organism grew on agar or in boullion, in long chains of from 6 to 20 elements. Examined in hanging drops, the chains moved slowly about, the single elements were much more active. This streptococcus stained readily and was occasionally flagellated. The organism was afterwards found in and isolated from the blood of all the healthy dogs examined. It is pathogenic for rabbits and guinea-pigs, and in dogs causes a large localized abscess. It was not only seen in large numbers in the blood of distemperous dogs, but was isolated from the blebs; it was also obtained in pure culture from the liver of a dog which had succumbed to distemper. He concludes that the streptococcus has nothing to do with distemper. Pitfield (R. L.) Microscopical Bulletin. 1897. A. W.

Bacteriology and General Practice.

Dr. J. W. Washbourn sketches in brief outline the present position occupied by bacteriology in relation to the needs of the general practitioner. He discusses in what measure a resort to bacteriological investigation may be of service in the diagnosis of a few of the commoner affections met with.

Tuberculosis—In no disease has bacteriological examination rendered more diagnostic aid, though at times incorrect conclusions have undoubtedly been drawn. There are two methods of procedure: 1. Microscopical examination direct, and by 11. Inoculation of guinea pigs. The first method depends upon differential staining with aniline dyes, and mistakes have been made by con-

fusing the tubercle bacillus with the smegma bacillus (found in the mucus secretions of the genital organs, in the ear and nose) and the bacillus of leprosy. Great care must therefore be exercised in examining for suspected tuberculosis of the genito-urinary tract; it being well to draw the urine, for testing, with catheter, and, if necessary, to confirm the diagnosis by inoculation experiments. Leprosy is, with us, very rare. In suspected phthisis an examination of the sputum is, for all practical purposes, in the hands of an expert operator, conclusive. The chief objection to the inoculation experiments is the time that they require. The animals do not die for many weeks, or months, though they may be killed and examined after a fortnight or three weeks. Tubercle bacilli are rarely present in certain tuberculous products, especially ascitic fluid in tub. peritonitis and the clear effusion in tub. pleurisy.

Diphtheria—The diphtheria bacillus can be recognized with certainty only by its macroscopic and microscopic appearance in cultivations, combined with its pathogenic action on animals. The inoculation exeriments, taking four or five days, are rarely of service. There are three varieties of bacteria, which may be confused; the Klebs-Loeffler, or true bacillus of diphtheria, the Xerosis bac. and the Hoffmann bac. The true diphtheritic germ is possibly found in the healthy throat, yet, says Dr. Washbourn: "I would, indeed, lay it down as a dictum, that in all cases of throat affection, where the clinical appearance suggests diphtheria, the presence of a bacillus having the microscopical and cultural appearance of the diphtheritic bacillus is, for all practical purposes, sufficient evidence that the case is one of diphtheria.

Typhoid fever—Microscopic examinations, direct, to determine the presence of the typhoid bacillus are, for various reasons, seldom satisfactory, while the indirect method of diagnosing the disease by Widal's Serum Test is of great value.

Streptococcal Infection—It is only where we are dealing with pus from such situations as the pleura or the subcutaneous tissue that the discovery of streptococci can be relied upon as evidence of streptococcal infection.

Pneumonococcal Infection—Inoculation of animals does not give reliable information. It is only in a certain proportion of cases in which capsulated diplococci are present in abundance, in the sputum, that a diagnosis can be made by bacteriological methods.

Other diseases in which bacteriological examination is of value are: anthrax, glanders, cholera, &c. Dr. Washbourn justly lays great stress on taking every precaution in the collection of the sample. He advises physicians to provide themselves with sterile tubes, pipettes and swabs. Clin. Journ., Lond., 1897, xi, 145.

A. S.

The Formation and Clinical Significance of Albumin and Casts in the Urine.

Porter begins his interesting paper with a consideration of the nature of serum albumin in the blood and concludes that it is not a simple body as is ordinarily believed, but that it is composed of a number of complex proteid molecules, isomeric in their nature. The albumin originating in the kidneys and appearing in the urine comes from two sources, transudation through the Malpighian tufts and as an excretion direct from the excretory epithelium. Its presence may indicate simply its substitution for urea, the structure of the kidney remaining unimpaired for years. It may indicate a transudation through the walls of the capillary blood vessels in conjunction with a traumatism or a truly inflammatory lesion. Or, lastly, it may indicate the substitution for urea with marked degenerative changes in the epithelial cells of the kidney. Casts are formed from the excreted albumin, most probably through the agency of uric acid, which produces a solidification of the proteid substances. They may be divided into two distinct classes, one denoting no structural change and one that signifies positive retrograde alterations. Porter (W. H.) Philadelphia M. J., 1898, i, 587.

E. B. B.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF

E. A. DE SCHWEINITZ, Ph. D., M. D.,

Director Biochemic Laboratory, B. A. I., Agricultural Department.

L'Alcoolisme expérimental et son influence sur l'immunité.

Dr. Deléarde reports some experiments showing the effect of alcohol in rendering animals more susceptible to bacterial infection. It is well known that individuals who are addicted to the use of alcohol are more susceptible to pneumonia, erysipelas and typhoid fever, as the body appears to be less resistent to these pathogenic bacteria. It has also been shown that pathogenic bacteria which are so attenuated that they will no longer cause disease in animals will give rise to a fatal infection, if the animals are previously intoxicated with alcohol. Deléarde has shown that rabbits previously intoxicated and then vaccinated against hydrophobia or tetanus do not acquire immunity at all, or only with very great difficulty. The alcohol, even if very dilute, evidently exerts upon the leucocytes a negative chemiotactic action. In those institutions where the method of vaccination for rabies is practiced it has been found, in the rare cases where the vaccination is ineffective, that the individuals had been addicted to the use of alcohol. It is important to recommend, therefore, to those who are being submitted to preventive treatment for hydrophobia and tetanus that they abstain from alcohol during the time the treatment is in progress, and also for some months after. It would appear, therefore, to be an error, to gorge individuals that have been bitten by venomous serpents with whiskey and rum. Dr. Deléarde, Annales d l'Institut Pasteur, Nov., 1897.

A further study of the Influence of Alcohol and Alcoholic Drinks upon Digestion, with special reference to Secretion.

These very interesting experiments were made by the authors upon dogs, and confirmed to some extent, with reference to the salivary secretion, by tests upon man. The results of the work show that the presence of strong alcohol or alcoholic beverages in the mouth has a direct stimulating effect that leads to a sudden increase in the flow of saliva. This acceleration of secretion is of brief duration, and it is not different from a similar stimulation caused by dilute acid as vinegar, ether vapor, etc., or that induced when the salivary glands are electrically excited through the nerves. Not only is the volume of the secretion increased but there is also an increase in its organic and inorganic constituents. The results further show that alcoholic fluids absorbed through the stomach do not give rise to an indirect stimulation of salivary secretion, or exercise any appreciable influence upon the composition of the secretion. Hence the authors conclude that alcohol and alcoholic fluids are without any specific effect upon the secretion of saliva except in producing a transitory stimulation while in the mouth cavity. On the contrary, alcohol and alcoholic fluids have a very marked effect upon gastric secretion, increasing very greatly the flow of gastric juice, and also its content of acids and total solids. This action is exerted not only by the presence of alcoholic fluids in the stomach, but also indirectly through the influence of alcohol absorbed through the intestines. Whiskey, brandy, sherry, claret, beer and porter all produce stimulation of gastric secretion, which is not only more acid in reaction, and contains a larger amount of total solids, but is likewise strongly proteolytic. While from a chemical standpoint alcoholic beverages cause a greater or less retardation of digestive proteolysis, there is an increased flow of gastric juice, rich in acid and of unquestionable digestive

power. The two effects may thus normally counterbalance each other though modifying conditions may readily retard or stimulate the processes in the stomach. Foremost among the latter should be noted the rapid disappearance of alcohol from the alimentary canal. Since any influence exerted by alcohol or alcoholic beverages upon the digestive power of the gastric juice must depend upon the presence of alcohol in the stomach contents, it follows that the tendency toward removal of alcohol from the alimentary tract by absorption, must necessarily diminish correspondingly the extent of the retardation of gastric digestion which the presence of alcohol in the stomach may occasion. As the stimulation of gastric secretion is brought about not only by the direct action of alcohol in the stomach, but also by the indirect action of alcohol absorbed through the intestines, it follows that any inhibition of the digestive action of the gastric juice would probably be of shorter duration than the stimulation of secretion, and consequently, in the body, alcoholic fluids would hardly lead to any retardation of gastric digestion. This point was very carefully and thoroughly tested by animal experiments made upon healthy dogs with gastric fistula, proteid test meals being used. The results obtained give little or no suggestion of hastened digestion, and the conclusion must therefore be drawn that the two diverse factors above referred to more or less counterbalance each other, so that gastric digestion in the broadest sense of the term, is not markedly affected under the influence of abcohol or alcoholic fluids. This conclusion stands in perfect harmony with the results of the investigations of Zuntz and Magnus-Levy regarding the influence of beer on the digestibility and utilization of food in the body. These investigators found by a series of metabolic experments on men with diets largely made up of milk and bread, that on individuals accustomed or unaccustomed to the use of alcoholic beverages, the latter did not in any way diminish the utilization of the food by the body.

The results of the author's experiments show that when 200 c. c. of 37½ per cent. alcohol were introduced into the stomach of a dog with the duodenum ligated at the pylorus, the disappearance of the alcohol by absorption through the stomach walls into the blood was nearly complete in from 3 to 3½ hours. It can well be believed that when 6 to 8 grams of alcohol are taken into the stomach in the form of wine or beer that 80 to 90 per cent. of the alcohol will disappear from the alimentary tract inside of half an hour. In view of this rapid disappearance of alcohol from the alimentary tract it is plain that alcoholic fluids cannot have much if any direct influence upon the secretion of either pancreatic or intestinal juices. American Journal of Physiology, Vol. 1, No. 2, March, 1898. By R. H. Chittenden, Layfayette B. Mendel, Holmes C. Jackson.

The effect of Diphtheria Toxins and Antitoxins upon the Nervous System of Guinea Pigs.

The author's work upon the effect of toxins and antitoxins on the nervous system of guinea pigs shows that after a subcutaneous injection of diphtheria toxin a change begins very quickly in the nerve cells of the spinal cord, principally in the anterior columns. The cells soon appear colorless and after a while the nucleus can be colored intensely blue. Finally the cell shows ragged edges and the nucleus can no longer be seen. Although these changes in the cell could be noted there was no distinct paralysis apparent in the animal. Some two months after the injection of the toxin the animal exhibits paralysis, and neuritis is apparent. At the time of the appearance of the neuritis some of the cells of the spinal cord had become normal in appearance while others still remained changed. The diphtheria antitoxin may cause some slight changes in the spinal cord as well as in the peripheral nerve fibres, depending of course upon the quantity used. If toxin and antitoxin are injected into the animal at the same time, or if antitoxin is injected into an animal previously inoculated with toxin, there appears to be no change in the nerve cells, provided sufficient antitoxin is introduced to neutralize the toxin. On the contrary, if

there was a considerable excess of toxin the nerve cells presented the characteristic diphtheria appearance. The author's work shows conclusively the beneficial effect of antitoxic serum and that it should be injected as soon as possible. If injected a week after infection its usefulness is somewhat doubtful. The work has also shown that antitoxin may exert some slight changes in the nerve cells. Care should always be taken therefore, not to inject too large an amount of antitoxin. This effect upon the nerves corresponds with the results obtained by Kempner and Pollack upon the toxin and antitoxin of the bacillus botulinus, and the work of Goldscheider and Flatan upon the toxin and antitoxin of tetanus. Dr. Murawjeff, Institute for Bacteriology in Moscow.

A New Method for the Determination of Albumoses in Urine.

In order to avoid the errors which may occur with Salkowski's method, on account of the presence of urobilin, the author prescribes the following : A saturated solution of ammonium sulphate is added to the urine and the mixture centrifugalized. The albumoses, the albumen, the urobilin and a small quantity of uric acid and its salts separate quickly in the bottom of the centrifugal tubes. The excess of ammonium sulphate is poured off and the residue rubbed up with 97 per cent alcohol. The urobilin is dissolved by the alcohol while the albumoses, the albumen, the uric acid and its salts remain behind. Water is added to this and the whole filtered. The albumen, uric acid and the insoluble salts remain behind on the filter paper while the filtrate contains the albumoses which may be detected by the biuret test. The author says that this method is sufficiently delicate to determine the presence of one part of albumoses in 20 to 30 thousand of urine. For clinical purposes 10 c. c. of the specimen of urine and 8 grams of ammonium sulphate are heated in a test glass until all is dissolved. The solution, either while warm or after cooling, is then centrifugalized for one-half to one minute and the rest of the process is carried on as above indicated. In this manner one part of albumose in five thousand of urine can be detected. If there is no centrifugal machine convenient the method can be carried out with 10 c. c. of the urine heated in a tube with ammonium sulphate. A portion of the albumose will separate out on the sides of the glass. The solution is then poured off and the residue washed with alcohol and dissolved in water and the biuret test applied. This modification is not so delicate as the one in which the centrifugal is used. The alcohol extract may be used for the determination of urobilin. Upon the addition of a zinc chloride solution this gives a beautiful fluorescence. The author further claims that the only other substance which might be present in the urine that would cause a mistake in the biuret reaction is hæmatoporphyrin. This coloring substance is dissolved by the alcohol but not completely, if a considerable quantity of it is present. If the alcohol extract has a very red color, an examination with the spectroscope indicates the presence of hæmatoporphyrin. In this case the specimen of urine should be treated first with barium chloride, which removes this coloring substance but does not precipitate the urobilin or the albumoses. Ivar Bang, Deut. med. Woch., Jan., 13, 1898, No. 2.

The Influence of Tannin upon the Tubercle Bacilli.

Sabrazès of Bordeaux has found that the tubercle bacilli develop very rapidly and abundantly in media rich in tannin. They acquire in this way a great virulence, and this virulence is preserved during many generations. An animal inoculated with tubercle bacilli, and subsequently treated with tannin succumbs very readily to the disease, and a tuberculous ulceration is formed at the point of inoculation. The tubercles which develop in animals are filled with pure tubercle bacilli. If tannin is so favorable to the development of the bacilli, the question very naturally arises, of what value are the specific preparations for tuberculosis, such as elixirs, wines, pills and so forth that have tannin as a basis? Sabrazès. Soc. de biol., Dec. 19, 1897.

Therapeutic Notes.

Nervous Exhaustion.

Dr. T. D. Crothers, editor of the Quarterly Journal of Inebriety, says: "We have repeatedly urged upon our readers the value of Horsford's Acid Phosphate. In certain conditions of nervous exhaustion it has proved to be almost a specific, and deserves a trial under all circumstances." It is one of the most efficient remedies for dyspepsia, exhaustion and nervous troubles.

Stomachic Derangements.

Gray's Glycerine Tonic Comp. neutralizes stomachic acidity, checks fermentation, promotes appetite, increases assimilation and does not constipate. It is prompt and reliable in its action and does not over stimulate or produce stomachic congestion, a common fault of many so-called tonics. It is also agreeable to the taste and causes no unpleasant reaction whatever.

Respiratory and Aural Affections.

Dr. S. S. Bishop of Chicago has written a very interesting article on sprays and inhalents. In his opinion the nebulizers manufactured by the Globe Manufacturing Company of Battle Creek, Michigan, stand at the head in perfection of design, construction and finish, special mention being made of the device originated by this company for the application of vapor massage.

Cystitis.

In addition to the mechanical treatment usually essential in the management of acute and chronic cystitis the administration of Lambert's Lithiated Hydrangea is often of the greatest service. It is a valuable remedy for normalizing the renal function and calming the congestive conditions of the kidney.

Cleanliness in Catarrhal Affections.

To permit secretions to remain on the surface of the inflamed mucous membranes is to increase the existing irritation and delay the healing process. The crusts must be dissolved and washed away. For this purpose an alkaline antiseptic solution such as Bensolyptus (Schieffelin) is especially indicated.

Diastatic Preparations.

Prof. Tucker of the Albany Medical College says that having completed a series of tests of some of the medicinal preparations of malt and cod liver oil he thinks it fair to state that Maltzyme with Cod Liver Oil surpassed all others in diastatic activity, upon which the remedial value depends.

Food Manufacturers vs. Physicians.

Some of the prepared foods are advertised in newspapers and circulars on the cure-all and "save the doctor's bill" plan. The Imperial Granum Food, however, is advertised only in the medical press and deserves the support of physicians on this account, therefore, as well as for its merits as an ideal prepared food.

Pain in Otitis.

Prof. Powers of San Francisco writes: "At my first visit I found a copious discharge of bloody serum from the ear with hardly a trace of pus. Thorough cleansing of the meatus with dry cotton relieved the pain in the head remarkably, and with a dose of antikamnia, 10 grains, he slept some hours.

Analgesic and Sedative.

Dr. Ritter, of Milo, Ohio, speaks enthusiastically of the merits of Papine. The remedy works like a charm in relieving pain and giving rest. He used it in one case for at least six months in increasing doses, without doing the least harm. It has now been three months since Papine has been discontinued and the patient is in perfect health.

A Deserved Compliment.

Dr. F. M. Johnson of No. 117 Beacon St., Boston pays the following deserved compliment to the Maltine Company:— "For more than fourteen years I have constantly made use of a number of your preparations, and it gives me much pleasure to state that the results have been uniformly and eminently satisfactory."

Uterine Diseases.

In the Atlanta Medical Journal of February, 1898, Dr. Herman D. Marcus, late lecturer on "Materia Medica" at Medico-Chirurgical College, Philadelphia, says that he used Micajah's Medicated Uterine Wafers with distinctly favorable results in fifty-five cases of uterine and vaginal diseases.

To the Medical Profession.

In the contract between Dr. A. Gude and M. J. Breitenbach it was agreed that at no time should any means be adopted to increase the business in Gude's Pepto-Mangan, other than through the recognized channels to the medical profession. Gude's Pepto-Mangan is never placarded on walls, fences, etc. Any assertion to the contrary is false.

A Correction.

Dr. W. C. Boteler, Editor of the North American Medical Review, says it is with pleasure that he takes the opportunity of denying certain charges which appeared in the November, 1897, issue of the North American Medical Review reflecting on the biological products, especially diphtheria antitoxin, of the H. K. Mulford Company.

Rest and Quiet.

A well known physician of this city writes us that whenever any doctor has a patient suffering from melancholia, hysteria, and all the many distressing afflictions these two words cover, and one who needs rest, quiet and the best of treatment, Markleton is the place. Dr. E. O. Crossman, Medical Director, will gladly correspond with you,

Tuberculosis.

Dr. J. W. Lowell, Ferry Villege, Portland, Maine, says he has used McArthur's Compound Syrup of Hypophosphites and likes it very much. He believes the treatment of tuberculosis with McArthur's Syrup of Hypophosphites is the only scientific treatment.

Loss of Appetite.

Digestive disturbances are frequent in Springtime. Just's Food should be prescribed for loss of appetite, languor, biliousness, etc., and is valuable in these conditions because it is palatable, easily digested and nutritive.

Petroleum Emulsion.

The Angier Chemical Company put petroleum on the market in the form of an emulsion because they believe that as the process of emulsifying thoroughly breaks up the oil into minute particles it thus pre-digests it and puts in into a condition so that it can be absorbed at once. The Angier Emulsion has combined with it the well known hypophosphites.

Catarrhal Conditions.

A leading throat specialist of Washington said the other day that he was well informed as to the virtues of Firnol. It is especially useful to those suffering from Coryza, Atrophic Rhinitis and Hay Fever. Two atomizers in one box generally go with a bottle of Firnol, one, dark colored, for Firnol Compound, the other, for any cleansing solution.

A Pre-Antitoxin Mortality Reduced.

Prior to the introduction of anti-diphtheritic serum, the mortality from diphtheria at the Harper Hospital, Detroit, averaged 40 per cent. In 1897, 141 cases were treated with 7 deaths, 2 of which were moribund when admitted. The antitoxin employed exclusively in Harper Hospital during 1897 was from Parke, Davis, and Co.'s Biological Department.

A Valuable Addition to Materia Medica.

Schuyler C. Graves, M. D., Dean and Professor of Principles of Surgery and Clinical Surgery in the Grand Rapids Medical College, says it gives him pleasure to state that Sanmetto, at his hands, has proven all that its manufacturers claim for it. He considers it an invaluable addition to our Materia Medica.

Ulcerative Tubercular Edometritis.

A sharp curettement of womb and cervix was performed, the cavity was cleansed by the bovinine peroxide reaction washed out with Thiersch solution; walls touched up with 25 per cent. pyrozone; and packed with strips of bi-sterilized gauze soaked with iodoform-bovinine. The patient was immediately relieved of pain and made a speedy recovery.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF NOVEMBER 24, 1897. Dr. S. C. Busey, President, in the Chair.

NEURASTHENIA.

BY F. B. BISHOP, M. D.

From various causes affecting the higher nerve centres, the disease known as Neurasthenia, or Nerve Exhaustion, may result, giving expression to an unlimited number of symptoms, physical and mental, which may simulate one or more of the very serious organic diseases. It is my purpose to report a few of such cases to-night, some of which are not unfamiliar to two or three of the members of this Society.

The first case is, according to Dr. Beard's classification, one of "Sexual Neurasthenia," and is very interesting from the fact that his general mental condition was such that, *legally*, he would have been considered thoroughly responsible for his actions, for he was naturally an int elligent man and confided to no one but his physician the terrible obsessions that almost took possession of him, from time to time, in the form of a sudden impulse to kill his own child. The case is briefly, as follows:

A young gentleman of twenty-eight, presenting the appearance of one in fairly good health, addicted to masturbation in early youth, was married shortly before consulting me. He used tobacco freely, and gave a history of excessive indulgence in sexual intercourse. He complained of dizziness during the day, a twitching of muscles of the extremities at night, which would come on just as he was dropping off to sleep; he would awaken with the most violent palpitation of the heart. These conditions would frequently keep up during the better part of the night, almost exhausting the patient before morning, and rendering him quite useless for his daily work. By abstaining from his excesses, and by the use of galvanic, faradic and static electricity, he soon recovered. Eighteen months later, he called upon me again, stating that since he had seen me, he had become the father of a baby boy, which was, at that time, about one year old. His old excesses gradually returned and with them, his old symptoms to an exaggerated degree. While sitting quietly in the midst of his little family, he would be suddenly impelled by a diabolical impulse, to murder his own little baby. The sight of a knife or any sharp instrument, would suggest the idea; then the morbid impulse would urge him to carry

out the suggestion, and it was only by the most extraordinary exercise of the will, that he would force himself to leave the presence of the child to keep from yielding. There were no hallucinations in this case, nor delusions, but an impulse closely approaching those of insanity. His powers of reasoning and of the will were mercifully spared, and thus was averted the most horrible infanticide, followed perhaps, by suicide. Abstinence from excesses, and the use of tonics, baths and electricity completely restored this gentleman. A period of ten years has elapsed; there are several children in the family, and there has never been the slightest suspicion of a return of his trouble.

The second case is interesting from the fact that this patient was the subject of hallucinations of hearing, accompanied by suicidal impulses. The case was as follows:—A gentleman of intelligence, forty-two years of age, of fine physique, standing full six feet, had indulged excessively in sexual intercourse before marriage; since his marriage, which occurred about fifteen years before consulting me, his excesses have continued. He began to suffer about two years after he was married; at that time, he was a perfect giant, weighing 210 pounds; from this, he was reduced to 160 pounds, pale and haggard in appearance, obstinately constipated, with soreness upon pressure over the entire abdomen, frequent desire to urinate, soreness in prostatic urethra, headache and constant aching in the back, weakness in the legs, with absence of patella reflex on both sides; could not stand with both feet together with eyes closed; memory was poor; he could not concentrate his mind upon his business, and he was losing confidence in his business ability. He had poor appetite and bad digestion; insomnia was a marked feature; his thoughts were constantly on himself; he was often very despondent, and frequently, threatened to end his misery by suicide; he claimed that voices, at times, whispered to him, especialiy when shaving, to cut his throat; he believed that he had cancer of the bowels, locomotor ataxia, &c., and that he was becoming insane. I could easily explain away his fears; the hallucinations, delusions and morbid impulses were never considered by him as any thing but subjective phenomena, arising from his exhausted state, his reason holding him on the safe side of the border land of insanity.

The local symptoms were weeping penis, emissions during defecation and without erections, sweating testicles, sweating hands, very irritable urethra which caused extreme prostration if the sound was passed for an inch beyond the meatus. Twelve years have passed since I first met him, he is now well, and has been for the last five or six years. His treatment was by tonics and electricity, and abstaining from sexual intercourse.

Here we have two cases,—one with homicidal impulses, and the other with delusions, hallucinations and suicidal impulses. Both of these patients were splendid business men, and while it required the most extraordinary effort upon their parts to perform their daily duties, yet they were performed in a most satisfactory manner.

The next case has been published in an article read in Boston before the American Electro-Therapeutic Association, under the title: "The Static Cage, and its Uses." She was the wife of a physician, and four years ago, while riding a young horse near her home, in New York State, was thrown, and received the full force of the fall upon her

back. Paralytic symptoms soon followed, with intense pain and irritation of the spine. She remained in bed for the better part of three years. Cerebral, as well as spinal exhaustion developed. She was eventually taken out and put into a Meig's Suspension Chair, and she improved slightly, so that she could, by the aid of the chair, move about the house. One morning, she saw lying upon the table a copy of a daily paper, and at the head of a column, in glaring type, the word, "Beheaded." This headline pursued her constantly, and wherever she turned, her eyes opened or closed, there appeared that headline in large black letters. After a little while, this obsession assumed form, and a headless human body or a bleeding head, would present itself constantly to her mental vision. Finally, the headless body of her own baby seemed always before her. In this weakened condition of body and mind, she visited relatives in Washington, and it was at this time that Dr. Hammett saw her and advised her husband to consult me, I found a lateral curvature, involving the three lower dorsal and two or three upper lumbar vertabræ, an exaggeration of all the reflexes, great tenderness over lumbar and dorsal spine. She was brought to my office every day, and treated for half hour in the static cage by the ozone bath. The tinsel brushes were so arranged that they sifted the current right out upon her back; she seemed never to tire of this treatment. She was under my care about two months, during which time she greatly improved in body and mind and absolutely refused to leave Washington and return home, until her husband had ordered a static machine, and had constructed a static cage; she insisted upon his attending my office every day, to see how the cage was used. I have received a number of letters from this lady, each one more intense in its praise of the static cage, as her health has steadily improved.

Dr. Franzoni has sent me a number of interesting cases, but one in particular was interesting from the fact that this lady had been treated by a number of physicians who gave various names to her complaint, viz,—malaria, change of life, hysteria, spinal irritation, &c. Dr. Franzoni seemed to strike at once the nature of the malady, and she improved under his treatment wonderfully; when he discovered that medicine seemed powerless to improve her condition further, she was sent to me for electrical treatment. Under this treatment, the static cage and galvinism, with the assistance of medication from Dr. Franzoni, she has improved steadily. The principal obsession with her was that she could not see a funeral procession pass without the most intense physical and mental depression. She had an irritable spine and lightness of the head, pain in spine and head, inability to take exercise, &c. This condition was produced by a severe mental shock in the following manner: On returning one summer afternoon to her suburban home, she heard scream after scream, proceeding from her house. Just at this time a neighbor ran out and exclaimed, "Oh, Mrs. ——, your girl is burned up." The poor woman had but one thought, that of her only daughter; as she was hurrying on, the form of a girl in full blaze ran out of her house, and fell in the yard; her husband rushed to the rescue, and when the flames were extinguished, discovered the form of their dying servant. This was several years ago, and this lady is just slowly recovering from that shock. Now, why should shock pro-

duce such a lasting effect? We know that it often kills, but when the patient's life is spared, it would seem that unless some damage were done to the central structures, he would quickly recover, and with many, this is the case; but with a very sensitive subject, the case is quite different; especially if there is an unstable condition of the higher nerve centres a severe shock is all that is necessary to disturb their equilibrium, and distort their healthy and harmonious action, rendering them inco-ordinate, and after the shock has subsided, they are powerless of themselves, to resume healthy action. The gentle galvanic current passed through these centres aids them to return to physiological action.

The ozone bath necessitates the inhaling of pure oxygen which permeates every tissue, feeding the impoverished blood corpuscles, and supplies food and strength to the psychic, motor, and sensory centres. This is a theory, Mr. President, but the success that has followed this treatment helps to sustain this hypothesis.

DISCUSSION.

DR. ADAJAH BEHREND asked Dr. Bishop what cases he would classify as neurasthenia. Neurasthenia was a very bro'ad term, and might include paranoia, me ancholia, and all those forms of mania which are accompanied by fixed ideas. He wished to know whether Dr. Bishop included such cases under the term neurasthenia.

DR. THOMAS A. CLAYTOR said: It would be interesting to study the pathology of these cases, if they have any pathology. Until comparatively recently it was thought that neurasthenia was a functional disease of the nervous system, but that explanation will hardly be accepted at the present time, for a number of investigations have been made which show that a change takes place in the nerve cells, due to fatigue, exhaustion, etc. Hodge has experimented in this line especially on birds. He killed sparrows and swallows in the morning and examined their nerve cells, and again killed sparrows and swallows in the afternoon, and found that the activities they underwent during the day had changed the nerve cells both mdhorologically and chemically. The nuclei were smaller, showed an irregular outline, took a darker stain and lost the reticular appearance. The cell protoplasm did not take the stain so readily and was much shrunken.

In the spinal ganglia the protoplasm was vacuolated.

He also found definite changes in the spinal ganglion cells of frogs, cats and dogs which had been subjected to prolonged electrical irritation, and these changes were very similar to those resulting from fatigue.

Latovski produced a chronic reflex irritation of the spinal cord by ligating nerves peripherally and on microscopic examination of that part of the cord to which these nerves belonged found that many cells showed marked changes, such as vacuolation and shrinkage of the protoplasm and an alteration in the size and shape of the nuclei. Similar changes have been found after stretching the sciatic nerve. Rachford has also proven experimentally that a chronic reflex irritation will produce changes in the nerve cells similar to those already mentioned.

It seems that neurasthenia may be explained in this way, since it has been found by experiment that while it takes a very short time for nerves to become exhausted it takes much longer for them to recover. Where it has taken 5 hrs. to exhaust the cells it has taken 24 hrs. for them to recover.

In this connection may be mentioned the experiments of Marie de Manacéine who kept ten young dogs awake for periods of 2, 3 and 4 months. Four of the dogs died when they had not slept for 92 to 143 hrs.

At the autopsy it was found that there had taken place marked changes in the brain. Ganglion cells were found in a state of fatty degeneration; the blood

vessels were frequently surrounded with a thick layer of leucocytes.

Hemorrhages had occurred on the surface of the cortex and in the region of the optic nerves and in the optic thalami.

It was found that after the insomnia had lasted from 96 to 120 hrs. the animals could not be restored either by warmth, artificial nutrition or abundant sleep.

The experiments are of interest in the study of neurasthenia as showing the profound effect that prolonged insomnia may and does have upon the nerve elements.

Dr. George M. Kober said that the pathology of neurasthenia had been well presented by Dr. Claytor. In the majority of neurasthenic subjects there would be found a defective nutrition, and he could see no reason why, under these circumstances, the delicate cell elements should not suffer first and foremost. It seemed to him that the beneficial effects reported from the use of electricity were largely due to the fact that the electricity stimulated nutrition. Weir Mitchell relied to a great extent on rest and proper feeding, more especially a milk diet, in gradually increasing quantities, supplemented with other nutritious food. Digestive errors, mental anxiety, and fatigue, over-study, excessive drains to the system especially the loss of spermatic fluid all lead to mal-nutrition of the system. We must look to the removal of the cause and the building up of the system in rational way.

Dr. George W. Johnston said that Beard, in his first article upon this subject, (Neurasthenia or nervous exhaustion, Boston M. & S. J., 1869, n. s., Lxxx, 217—221.), claimed to have used the word for the first time. "The morbid condition or state expressed by this term has long been recognized, and, to a certain degree understood, but the special name "Neurasthenia" is now, I believe, for the first time presented to the profession."

Others (e. g. Cowles, 1891) believe that Beard originated the word and fitted it to the condition. "It was the thesis of Beard to whom the world so largely owes the formulation of the accepted ideas of nervous exhaustion under the name given it by him."

Again, it is thought to be a modern word. Müller, 1893. "We owe to Beard the most modern name of our disease, the word Neurasthenia." Saunby, 1892. "Symptoms which are included in the modern and very convenient term Neurasthenia."

Dercum, 1895, traces the word further back. He says that the first man to use the word Neurasthenia was Dr. E. H. Van Deusen of Kalamazoo, Mich., in the supplement to the Biennial Report of the Michigan Asylum for the Insane for 1867. The title of Dr. Van Deusen's article was "Observations upon a form of nervous exhaustion (neurasthenia) culminating in insanity." Dercum further observes that the term is older than either, for it appears (he says) in Dunglison's Dictionary published in 1833, side by side with its German equivalent, Nervenschwäche. He says that contemporary English, French and German dictionaries do not contain it, and that the author of the word is a mystery.

Van Deusen (1869) says: "As to the term Neurasthenia, it is an old term, taken from the medical vocabulary." But the word did not appear first in Dunglison's Dictionary for 1833: it is a much older word than is generally supposed; how old is unknown. Beginning with Beard's article, published in 1869, I have traced the word back and found it in the following Medical Dictionaries published in various countries: 1869—Palli, Naples; 1865—Littré, Paris; 1863—Raige-Delorme, Paris; 1858—Nysten, Paris; 1857—Gabler, Berlin; 1855—Nysten, Paris; 1847—Gardner, New York; 1845—Palmer, London; 1845—Nysten, Paris; 1842—Siebenjahr, Dresden and Leipzig; 1834—Nysten, Paris; 1833—Dunglison, Phila.; 1830—Palmieri, Fuligno; 1830—Begin, Paris; 1826—Kraus, 2nd. ed., Göttingen and Wien; 1823—Begin, Paris; 1821—Kraus, 1st. ed., Göttingen and Wien; 1821—Knackstedt, 4th. ed., Erfurt; 1820—Brandeis, Tübingen; 1819—Brandeis, Göttingen; 1814—Knackstedt, 3rd. ed., Erfurt. Now, during all this period diseases of the nervous system were being

studied, and the condition we now know as neurasthenia was more or less accurately described. The imagination was taxed to give this condition a suitable name, and in text books, monographs, etc., we find "Vapors" "Spinal Irritation," "Nervosisme," (Bouchut), etc., but never the word "Neurasthenia," while all the time this word had been regularly appearing in the best medical dictionaries of France, England, Italy, Germany, and the United States. It cannot be contended that Time and Custom have given the word Neurasthenia a meaning at variance with its etymology.

In 1814 it was defined in the 3rd. ed. of Knackstedt's Medical Dictionary as "Nerve weakness. Weakness of the nervous system."

In the 4th. ed. published in 1821 the definition is as follows: "Nervous debility, Nervous Erethism, Abnormal Sensitiveness, Abnormal, morbid and increased irritability, Nerve Weakness, Weakness with erethism, Irritable weakness, Nerve Sensitiveness," and finally "Diminished energy with increased sensitiveness."

Now, compare with the foregoing (written in 1821) the sum of our present knowledge of the disease as expressed in the definition given by Cowles in 1891: "Neurasthenia is a morbid condition of the nervous system and its underlying characteristics are excessive weakness and irritability."

Here two points are at once apparent:

First. That the condition of nerve exhaustion accompanied by irritability has been recognized for half a century or more and that a word with a definition accurately fitting this condition has existed for the same length of time in the best medical dictionaries of the world, and yet it was not until 1867 that the word and the condition were brought together in a medical article.

Second. That if a definition accurately and completely describes a condition, then, in spite of profound investigation and reasoning extending over half a century, we know no more of the true nature, the essence of this condition called neurasthenia, than was known at the start.

I have said that I have been unable to find the word neurasthenia in a medical dictionary, or article prior to 1814, but in a treatise by Gianini, a professor in Milan, published in 1808, there appear the following statements: "There is a complication in asthenic maladies—It consists in a coexisting and simultaneous state of excessive excitement and of weakness. This state is designated by the term Neurasthenia. Neurasthenia results from a weakness of the nervous system."

Dr. Bishop, in reply to Dr. Behrend's question said, that various authorities on insanity held that though a man might have delusions and hallucinations, as long as they were under the control of the will or were recognized as delusions and hallucinations, they are not insane delusions. As long as such men were able to control their delusions or impluses they are not insane, but the line in such cases was very closely drawn. He had hoped that some of the speakers would discuss the subject from a medico-legal standpoint. Dr. Claytor had referred to the subject of nervous shock. Not only does this produce exhaustion of the cerebral and cortical cells, but the red blood corpuscles become less abundant, break up, and sometimes anæmia—with hemoglobinuriá is produced. The time that the system takes to recover from a condition of shock is entirely out of proportion to the time it takes to produce the disease. There was no doubt, as Dr. Kober said, that improper nutrition had a great deal to do with the production of such cases, and it was a question as to what part tonics and good feeding played in the cure of these cases. But such patients do not assimilate either food or medicine, and electricity played an important role in improving the powers of assimilation. This was the first time that he was aware that Beard had claimed to be the author of the word "neurasthenia," as he supposed that he had claimed only to have originated the "Sexual neurasthenia," and for a long time he had been ridiculed by the profession of this country and Europe, but before his death he had had the satisfaction of seeing his conclusions adopted.

REPORT OF INTUBATIONS, WITH INCIDENTAL REMARKS ON ANTITOXIN.

By C. W. Richardson, M. D.

About eighteen months ago I had the pleasure of reporting to this Society a few cases of laryngeal diphtheria which had been treated with the antitoxin of diphtheria, all of which were attended with a favorable issue.

This day I wish to bring the series up to date by reporting all intubations done by me since the report above mentioned. Through the agency of the American Pediatric Society, the vast amount of statistics furnished through hospital reports, and individual reports of work done in private practice, the antitoxin of diphtheria seems to have become beyond all doubt the most successful, the safest and most potent agent yet known for the treatment of laryngeal diphtheria.

If I were asked wherein had medicine shown its greatest progress during the past five years, I would unhesitatingly state it is the application of antitoxin for the cure of diphtheria. And as evidence, I would simply refer to tbe results attained in laryngeal diphtheria before and since the introduction of antitoxin. In the laryngeal form of diphtheria, we usually have no mixed infection. When therefore, we administer the antitoxin of diphtheria in a case of laryngeal diphtheria, when intubation is done if required, we should and do get favorable results.

As the manufacture of antitoxin becomes more perfect, the dosage more accurate and its early administration more frequent, the mortality will become still further reduced from what it is at the present writing. Several years ago it was stated at one of our meetings by an enthusiastic advocate of antitoxin that with the use of this agent we would have no further need for the introduction of intubation tubes. I regret to state that several of my colleagues have acted upon this supposition and have delayed intubation too long. Whenever stenosis exists it is not wise to wait to see the result of the use of antitoxin, thus jeopardizing the life of the little sufferer, when he can be relieved and put in absolute repose and safety by an operation so devoid of danger as intubation. There are several important advantages that ensue from the use of antitoxin in the management of our operative cases, thus robbing these of all dangers, that formerly resulted from the mere wearing of the tube. The introduction and extraction of tubes will always have the same influence on the results as of old; this influence being expressed in the manner in which the operation is done, whether it is skillfully or unskillfully accomplished.

During the wearing of the tube, we have the question as to the feeding of the child and the ever present possibility of the obstruction of the tube—these are the two great problems. Antitoxin lessens our difficulty in the former and removes our danger in the latter. I have been wonderfully impressed, in all cases of diphtheria, that I have seen since the use of antitoxin, with the change in the children's demeanor with regard to the taking of food. This stage of food abhorrence is entirely lacking in the antitoxin child, in fact, they seem to take food with a relish, after the first twenty-four hours, and often crave it. This being the case, the intubated child does not adopt various tactics, thereby causing the entrance of food into the larynx, but rather aids us in all effort to exclude it from the air tract. Also, even if ingestion of food, on account of mechanical impediment, is difficult or nearly im-

possible, we can resort to rectal feeding with marked prospect of tiding the little one over, as the period in which it is necessary to maintain this form of feeding is now reduced to a few hours. The length of period in which it is necessary to wear the tube has also been markedly reduced.

As is well known the necessity for operative treatment, in cases of laryngeal diphtheria, is solely due to the presence of a false membrane in the larynx which offers a mechanical impediment to the entrance and exit of air through the larynx. One of the most assured effects of antitoxin is its action upon this membrane causing its disappearance within a few hours and nearly as certain is its action in preventing its reproduction. Relying upon these premises we are able now, in many cases, to dispense with the use of the tube at a much earlier period than we were able to do before the introduction of this agent. The tube should certainly be removed within seventy-two hours, and if the conditions are especially favorable the tube can be dispensed with as early as forty-eight hours after its introduction. By this rapid removal of the tube we obviate all the injury which might ensue from the pressure of the tube as well as that greater danger resulting from the sudden obstruction of the tube. This rare complication seldom occurs before the third day, and by the earlier removal of the tube, we practically exclude this danger from our intubated cases. In summing up, I might state that since the introduction of antitoxin, I consider intubation as the safest, most easily managed, and most resultful operation suggested by modern surgery. That deaths still result from laryngeal diphtheria after intubation does not militate against the above assertion as the resulting deaths are due to conditions over which the operation has no effect.

In my first series of twenty-one cases in which all received antitoxin, we have seventeen recoveries with four deaths, a motality of 21 per cent. In all of these excepting one there was pharyngeal, as well as laryngeal diphtheria, and the average length of the duration of the disease before intubation was resorted to was three days. The amount of antitoxin given varied from 1000 to 3000 units, according to circumstances. In all cases the Klebs-Loeffler bacillus was demonstrated to be present. In the recovered cases the tube was removed, [illegible] the fourth case in twenty-four h[illegible]s, coughed out; in the fifteenth case in thirty hours, coughed out; in the first and twelfth cases, in forty hours, coughed out; in the second, eighth, eleventh, and twenty-first cases, in forty-eight hours; in the sixth, tenth, and sixteenth, in seventy-two hours; in the seventh, fourteenth, eighteenth, and twentieth, in ninety-six hours. In the ninth and seventeeth cases the tube was removed at the end of ninety-six hours and reintroduced, but finally removed at the end of forty-eight hours.

In one case there was no antitoxin given. This was in case twenty-two, that of a foundling infant of twelve months. I was called to the case late in the evening and found a miserable, half-nourished child in a moribund condition. There was no deposit in the pharynx. I intubated the infant, and, before leaving, suggested the use of antitoxin and the making of a culture. The child died in the early morning without getting antitoxin.

In cases twenty-two, twenty-three, twenty-four, twenty-five, and twenty-six no Klebs-Loeffler bacilli were found. In case twenty-two numerous cultures

were made and all proved negative as to result. The stenosis was marked and had continued with gradually increasing severity for twenty-four hours before operative measures were resorted to.

The death in this series, case twenty-three, was due, I think, to the delay in resorting to intubation. Case twenty-six was unique as it was my first and only unusual experience in intubation. It was a case of retained intubation tubes. When I introduced the tube it was done without any difficulty on the first attempt and without exerting any force. It is always my custom whenever extracting a tube to prepare another of the same size for immediate introduction before I prepare for extubation and have the armed introducer within reach. Fortunately, for my little patient, I did not neglect this precaution in his case. On removing the tube, apnœa immediately resulted, and I at once reintroduced another tube. In two days another attempt was made to dispense with the tube, and it was left out for ten hours and another introduced. In four days another attempt was made and the tube reintroduced after four hours. In five days another attempt was made to dispense with the tube, but was again attended with the former failures. Four days after the last attempt the tube was finally removed.

In summing up we are prone to give reasons why all of our cases are not successful and indicate wherein they could have been attended with other results. In the fatal cases I shall simply give facts and allow you to draw your own conclusions.

Case III. Child greatly stenosed, intense infection, sick six days, surroundings very unsatisfactory. Died three hours after intubation and administration of antitoxin, from cardiac paralysis.

Case IV. Foundling, eighteen months old. Died twenty-four hours after intubation from pneumonia.

Case XIII. Child profoundly poisoned. Antitoxin given on fifth day of sickness. Intubated in a moribund condition. It was fully five minutes after the tube was introduced before the child gave the slightest evidence from tbe larynx of its presence, that is, by coughing. Died in ten hours from cardiac paralysis.

Case XIV. Tube was removed on fourth day, and my visits ceased. Five days thereafter I was hastily summoned, and on responding found the child dead from cardiac paralysis.

DISCUSSION.

Dr. S. S. Adams had seen a number of cases of diphtheria since the introduction of antitoxin, and had seen no reason for changing the opinion he expressed in the discussion before the Society on antitoxin, when a distinguished member, who had since left the city, had uttered a warning against its use. It was undoubtedly a valuable remedy in diphtheria, but it was a remedy which had to be used with a fearless hand in order to get the best results. He thought the time taken to determine the presence of the Klebs-Loeffler bacillus was valuable time lost, and his advice was, as soon as a clinical diagnosis of diphtheria had been made, to administer the antitoxin. The earlier the antitoxin was given the better would be the results. He had seen some very interesting cases, and he had seen Dr. Richardson's dexterity in the introduction of the tube, and had never seen a case where Dr. Richardson had to make a second attempt. He had been called in at periods varying from eight to nine or ten days to administer antitoxin, with the statement that the physician thought it was time to give antitoxin. One of these cases was the severest he had ever seen recover without intubation. The child had been taken ill a week before and had been treated by the physician with those remedies which he

had found useful in former cases. When he entered the house the attending physician met him and said that it was time to administer antitoxin as the membrane had invaded the larynx. The child seemed so near death that it seemed useless to give antitoxin, nevertheless he did administer it under protest, and advised the physician, if the stenosis continued, to summon Dr. Richardson to introduce a tube. The next day, to the surprise of every one, the child was better, and finally got well. As Dr. Richardson had said, every case would not get well even with antitoxin, but certainly the vast majority would recover. Another point to be remembered in the administration of antitoxin, was that sufficient doses should be given. The fact that five or six cases had died after antitoxin was no reason for being afraid of it. In the Boston Hospital every case, with one exception, was given antitoxin as soon as admitted, and the only case of diphtheria arising in the hospital was a child which had not been immunized. This was the first time they had ever been able to show such a record as that in any hospital. He believed in giving good doses, and would begin with 2,000 units for a child two years old. He believed some supervision should be exercised on the manufacture of antitoxin. He had used various makes of antitoxin, and had got better results with some than with others. If there was no diminution in the membrane after 24 hours from the first injection he would give another dose of 1,000 units, or 2,000 or 3,000. He had seen cases where he believed the fearless administration of antitoxin had saved the child's life.

Dr. J. W. Chappell said he had had seven cases of laryngeal diphtheria, two occurring before the advent of antitoxin and both dying, and five since, all of which recovered. One, reported by Dr. Richardson, had been saved by intubation and antitoxin. Antitoxin would undoubtedly save life in laryngeal diphtheria and do away with intubation if it were used early enough, but physicians, as well as parents, were deceived in some cases by thinking them only ordinary cases of croup. There was marked stenosis in every one of his cases, and for awhile he thought intubation would have to be resorted to, but within 24 hours after the injection of the antitoxin the breathing was so decidedly improved that intubation was not necessary. In all the other cases the children had been treated with the ordinary domestic remedies before he was called in under the supposition that they were due to croup, and he had immediately administered antitoxin. He had used this remedy in other forms beside laryngeal diphtheria and with uniform success, as he had not lost a case of diphtheria since the introduction of antitoxin. He took pride in the reflection that he was one of the first in the District to use antitoxin, as it had seemed to him that the theory upon which it was based was correct.

As to the bad effects of antitoxin, he had seen none, except in his first case in which there had appeared a few days after the use of the antitoxin a slight eruption upon the skin.

He wished to say, in regard to culture tubes, that it was not well to rely absolutely upon the reports of the Health Office. He had been sadly deceived in the case of his own child. He had sent in three or four cultures before he got a report that the diphtheria bacillus was present. In another case so mild that the membrane had disappeared in a day or two the report came back "Klebs-Loeffler," and this for four weeks or more after the child was entirely well. Owing to the uncertainty of getting satisfactory reports from the Health Office he had been led lately to depend mainly upon clinical evidence. Moreover one should be reasonably certain of diphtheria before using antitoxin as the drug was expensive, and most patients objected to spending $3 for such a purpose, simply because the doctor suspected diphtheria.

Another point he wished to mention, while he was on the subject of the Health Office, was in regard to isolation. As the membrane usually disappears on the third day after the use of antitoxin it is practically impossible to isolate a child in one room for four weeks, notwith-

standing the regulations of the Health Office. He doubted whether any such period of isolation as this was necessary, though he believed in being on the safe side, but the present law is a very hard law to carry out. The rules of the Health Office in regard to diphtheria were enacted prior to the use of antitoxin, and he hoped the Health Officer would recommend a modification of the rules in his next report. Another feature of the law that needed revision was in the matter of the attendance of Maryland children on the District Schools, for the District law in regard to diphtheria did not apply to these children. He had tried to carry out the law conscientiously, but it was a difficult thing to do. If District children could not attend school inside of four weeks it was not fair to allow Maryland children to do so. He lived on the dividing line between the District and Maryland, and he felt it his duty to call attention to this matter. He also called attention to the subject of disinfection. Usually this was left to the people, and very often it was badly done. If the Health Officer had sufficient funds it would pay to spend some of it upon more thorough disinfection. His child had been attending the Central High School, and came home recently bringing her books and said that the school was going to be disinfected. It seemed to him that if this were going to be done the books should have been left behind, for they needed disinfection more than any thing else about the school.

Dr. G. N. Acker said of five personal cases of laryngeal diphtheria two had died and three had been saved by the administration of antitoxin, he also believed in giving the antitoxin without waiting for a report from the bacteriological examination.

Dr. Adajah Behrend said there were two kinds of diphtheria: the simple or Klebs-Loeffler diphtheria, and the streptococcus diphtheria, which produced blood poisoning. Most of the cases which died were cases of the streptococcus disease, while very few died from the Klebs-Loeffler infection.

Dr. B. G. Pool said he restricted the use of antitoxin to the severest cases, and always with good effect. In one or two cases where he used it the child was dying, and he did not expect any good results, but with this exception every one of the cases he had treated in this way had recovered. In regard to intubation, he wished to add his testimony to that of Dr. Adams.

Dr. E. L. Morgan said that he had no wonderful results from the use of antitoxin, as compared with the claims of others. For instance if he gave antitoxin on Saturday at 1 p. m., as a rule the membrane had not entirely disappeared until the following Monday or Tuesday morning. He had treated five cases of diphtheria with Mulford's Extra Potent Antitoxin No. 2. In one case which he had attended the parents had treated the child from Sunday until Thursday at 8 a. m., when he was called to see the patient, finding the throat very much swollen on the right side in the region of the angle of the jaw, and before he could procure the antitoxin which he administered at 10 a. m., the swelling had extended to the opposite side of the throat. He used local applications and began constitutional treatment about 5 or 6 p. m. At 8 p. m., he gave Mulford's Extra Potent No. 3. The general condition of the throat seemed better, the breathing freer, the swelling had subsided to some degree, the temperature had fallen. At 11 p. m., the child died in convulsions. He did not wish to convey the idea that this death was due to antitoxin. He thought some modification of the rule regarding the placarding of houses should be adopted, or the rule should be enforced, for there were physicians who never placarded the houses of their patients. He knew one member of this Society who attended a case of scarlatina and had failed to report the same. There was a case of diphtheria said to have been treated with antitoxin, which house never had a placard on it, and was adjoining the residence of another physician, who was unable to get accurate information on the subject. There were many people walking around the streets with Klebs-Loeffler bacilli in their

throats, and he thought the law should be modified.

Dr. C. W. Richardson said in closing the debate:

Dr. Adams and Dr. Chapell have both spoken against the practice of waiting for antitoxin in those cases where the stenosis is marked. We all know, at least those who use antitoxin to any marked degree, that antitoxin does not always cause the disappearance of the membrane in 24 hours. I have a child under treatment now to whom I gave 2,000 units of extra potent and the membrane still persists five days afterwards. There is not much, to be sure, but still the membrane is there. I had another case four days ago who still has a membrane though I gave two thousand units and again two thousand, although the membrane is disappearing. In the same way, in some cases of laryngeal diphtheria we may have the same condition; the membrane does not always slough off in 24 hours, and if we wait in such cases before resorting to intubation we may wait too long. I know of five other cases, all of which died because intubation was delayed waiting for the antitoxin, and I say, therefore, do not always wait for the antitoxin to cause the separation of the membrane when it is in the larynx, but have resort to intubation as soon as the stenosis becomes marked. Otherwise you may wait too long. Any one who has seen intubation easily performed, and the immediate and absolute relief which it gives, the child dropping off to sleep after a few minutes and breathing with perfect regularity and ease, can readily see the great relief it gives the child. We do not know what harm may be done to the lungs and to the heart, which may be the cause of its subsequent death from cardiac paralysis due to straining during stenosis of the larynx. Some one has referred to the dangers of antitoxin. In my early cases of antitoxin I was more careful about the dosage than I am now, but since I have used it so much I have come to the conclusion that it does no harm. In the many cases I have seen it used I have never known it to do harm, and when a case becomes severe I give a good dose at the start, 1500 to 2000 units at the first dose.

I had hoped some gentleman would refer to the series of non-diphtheritic membranous laryngitis so as to give me a loophole for some remarks. This series brings up that great question of whether there is such a thing as membranous laryngitis of non-diphtheritic type. These cases all had a membrane in the larynx, and in one there were quite a number of cultures made, four at least, and no bacilli were found to be present. All were serious cases. One certainly proved to be so because it died, and not one of these cases showed the presence of Klebs-Loeffler bacilli.

Dr. W. C. Woodward said: I do not wish to detain the Society against its will, but in view of the fact that the remarks of Dr. Chappell will go on record, I feel that it is due to the Health Department that some reply be made. No one knows better than the health officer that the present law is defective; but the present management of the health office must disclaim responsibility for any of its defects, as the law existed before the present administration of the department. The law as it stands is, I have been informed, the result of much amendment of what was originally a good bill, and was accepted not because it was what was wanted, but because it was the best that could be obtained at that time. But, while the department did not make the law, it has to enforce it, and is subjected, therefore, unjustly perhaps, to criticism resulting from defects in the law itself and not in its administration.

The act to prevent the spread of scarlet fever and diphtheria authorizes the heath officer to make certain regulations tending to prevent the spread of these diseases but, under an opinion of the late United States District Attorney, it does not authorize the affixing of penalties to such regulations; so that they may be considered merely as advisory. The law itself contains penalties for but three things, (1) failure to report cases of scarlet fever or diphtheria, (2) the giving of false certificates, and (3) appearance in public places of persons suffering from diphtheria. The power of the health officer is, therefore, extremely limited. This was well illustrated in a prosecution instituted some time ago

against a physician who had certified that there was no diphtheria in a certain house although the house was at the time placarded, the case which he had been called in to treat having been diagnosed but a day or two before by a competent physician as diphtheria and such diagnosis having been confirmed by bacteriological examination. The case against the physician was dismissed on the ground that the certificate which the defendant had given was not one required by the act, and that, therefore, the truth or falsity of it was immaterial so far as the case was concerned.

Neither the law itself nor the regulations made under it fixes the period of quarantine at four weeks, or requires the placard to stay up for that length of time. The regulations do require that in cases of diphtheria the placard remain upon the house for a period of four weeks after the disappearance of the membrane *unless* the bacilli have been shown to be absent from the throat of the patient before the expiration of that period. In cases of scarlet fever the placard is removed as soon as the infective period of the disease has passed, usually determined by the completion of desquamation.

As to the examination of cultures I am not as competent to speak as either Dr. Walsh or Dr. French, who have had direct personal experience in such work, but the very delay in expressing opinions as to the nature of the growth may be accepted as evidence of the care exercised in determining it. The instructions of the health officer are that the nature of the growth must be positively determined before a positive opinion is expressed, and if for any reason this cannot be done the physician is to be notified to that effect. Delays in making reports upon cultures are frequently occasioned by errors on the part of physicians; in some cases, after swabbing the throat, they do not inoculate the culture tube; in other cases they break up the culture medium with the swab instead of merely smearing the surface; and in others they leave the swab in the culture tube which interferes with the growth of the bacteria.

As to the matter of disinfection the health department has been endeavoring for three years past to establish a public disinfecting service. We are well aware that in many cases the disinfection done under the present method is worthless, as disinfection done by the laity without experience or supervision is apt to be. The school books were taken home from the schools prior to the disinfection of the buildings during the Thanksgiving holidays because the disinfection done at that time consisted entirely of the use of a bichloride of mercury solution with which the floors, desks, hand rails, etc. were washed. It is evident that such a solution could not have been applied to the books, and that if they had been allowed to remain in the desks they would have been in the way. No effort was made to disinfect the buildings by the use of formaldehyde on account of the very considerable expense which would have attended its use for disinfection upon so large a scale. Even, however, had formaldehyde been used, it would have been of little value so far as the books are concerned, except so far as it relates to their outside covering. Books are extremely difficult to disinfect, and if Dr. Chappell can indicate any economical and reliable method of accomplishing this result, he will confer a boon not only upon the health office of this District, but upon people the world over.

The results obtained by placarding houses under the present method are very difficult to determine; but such placards at least serve as notices to persons about to enter that there is a contagious disease within, and by giving notice to the public of the presence of such disease aids in the enforcement of the law requiring reports to be made, and in securing the exclusion from school of children living in infected houses. The value of placarding lies to a great extent in its effect in assisting in the enforcement of the general provisions of the law; if the law is weak the results derived from placarding are correspondingly diminished.

And finally as to antitoxin, I would state that there is nothing that occasions the health department more embarassment in enforcing the law than the use of antitoxin. Persons acquainted with

Cases where antitoxin was used.

Case No.	Physician.	Age.	Location of membrane.	Bacillus.	Stenosis.	Remarks.	Result.
I	Street	8 years	Pharyngeal & laryngeal	Klebs-Loeffler	Intense	Tube coughed out on second day	Recovery.
II	Price	4 do	do	do.	do.	Removed in 48 hours	do
III	Street	5 do	do	do	do.	Died 3 hours after intubation and antitoxin	Death.
IV	E. Sothoron	5 do	do	do	do.	Tube coughed out in 24 hours	Recovery.
V	Wellington and Cuthbert	18 months	do	do	do.	Died in 24 hours	Death.
VI	J. Chappell	6 years	do	do	do.	Tube removed in 72 hours	Recovery.
VII	J. W. Bovee	5 do	do	do	do.	Tube worn 4 days	do.
VIII	W. L. Miller	4 do	do	do.	do.	Tube worn 48 hours	do.
IX	Dillenback	6 do	do	do	do.	Tube worn 4 days. Reintroduced and removed in 2 days	do.
X	Newman	4 do	do	do	do.	Tube removed in 72 hours	do.
XI	T. C. Smith	7 do	do	do	do.	Tube removed in 48 hours	do.
XII	Roy	4 do	do	do	do.	Tube coughed out in 40 hours	do.
XIII	Chew	7 do	do	do	do.	Child unconscious. Died 10 hours after intubation	Death.
XIV	J. T. Sothoron		do	do	do.	Tube removed on fourth day. Died 5 days after extraction.	do.
XV	B. G. Pool	3 do	do	do	do.	Tube coughed out in 30 hours	Recovery.
XVI	Masterson	4 yrs. 4 mos.	do	do	do.	Tube removed in 68 hours	do.
XVII	Roy	2 yrs. 9 mos.	do	do	do.	Tube removed in 4 days	do.
XVIII	Price	2 yrs. 3 mos.	do	do	do.	Tube removed in 4 days	do.
XIX	Tarkington	5 yrs. 4 mos.	do	do	do.	Tube removed in 3 days	do.
XX	Bruckheimer and Behrend	5 yrs. 4 mos.	In larynx	do	Breathing difficult.	Tube removed in 4 days	do.
XXI	E. Sothoron	6 years	Pharyngeal & laryngeal	do		Child unconscious. Tube removed in 2 days	do.

Antitoxin not given.

XXII	Hall	18 mos	Laryngeal. No pharyngeal deposits	Klebs-Loeffler	Stenosis intense	Died in 10 hours	Death.

Cases of non-diphtheritic membranous laryngitis.

XXIII	W. W. Johnston	4 years	Laryngeal	No Klebs-Loeffler	Stenosis alarming	Tube removed in 48 hours	Recovery.
XXIV	A. Behrend	5 do	do	do	Stenosis intense	Died 10 hours after intubation	Death.
XXV	Z. T. Sowers	7 do	do	do	do	Tube removed in 48 hours	Recovery.
XXVI	W. W. Johnston / VanRensellaer	3 do	do	do	Stenosis alarming	Tube removed finally on 19th day	do.

the course of diphtheria under former methods of treatment, witnessing the recovery of a diphtheria patient after the administration of antitoxin, are very prone to doubt, if not actually deny that the case was one of diphtheria, and are therefore, correspondingly unwilling to submit to restraint necessary to prevent the spread of the disease.

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THE MILITARY SURGEON

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UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

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The Army Medical School.

The Closing Exercises of the Army Medical School, Washington, D. C., session of 1897-98, were held at the Army Medical Museum, April 1st., 1898, at 3 p. m.

The President of the Faculty first addressed the student-officers and the assembled guests.

REMARKS BY THE PRESIDENT OF THE FACULTY.

Col. C. H. ALDEN,

Assistant Surgeon-General, U. S. A.

Ladies and Gentlemen :

To-day brings to a close the Fourth Session of the Army Medical School. It is unnecessary for me to say anything to you about the constitution and objects of the School, as they have been made known fully in the Annual Reports of the Surgeon-General for several years past and by articles in the medical and general press. With the close of this session, twenty-four medical officers will have completed the course at the School before going out to their first stations, and about an equal number of medical officers of older date who were on leave or were stationed at or near this city, will have received partial instruction, chiefly in the laboratories of this School. So that it is seen that a considerable number of the Assistant Surgeons of the Army, have already felt the influence of the School. The effect of the instruction here given, in increasing the efficiency of the Medical Department and thereby benefitting the Army at large, has been noted by officers in all departments and many others interested in the service, and I am sure this appreciation has been very gratifying to the Founder of the School and to the Faculty.

The order of duties during the present session has been substantially the same as in former years. The morning hours from nine to twelve, have been passed in the Microscopical Laboratory. The afternoon from one to three, in the Laboratory of Sanitary Chemistry. At 3 o'clock p. m., on five days of the week, there has been a lecture either on the Duties of Medical Officers, Military Surgery, Military Medicine or Military Hygiene. On Saturday morning at nine, instruction in Hospital Corps Drill and First Aid, has been given at Washington Barracks, and later in the morning instruction in riding at Fort Myer,

Va., by Lieut. White, 6th Cavalry, by the courtesy of Colonel Sumner, the Commanding Officer. Several short auxiliary courses have been given as in former years: A valuable course in Military Law by Lt.-Col. Davis, Professor of Military Law at West Point; a very instructive course on Mental Diseases at the Government Hospital for the Insane, by Dr. Foster, through the courtesy of Dr. Godding, the Superintendent; another very interesting course on Parasites in Man, by Professor Stiles, Ph. D., of the Agricultural Department, and one by Dr. Robt. Fletcher, F. R. C. S., on the Army Medical Library. Instruction has also been given during the present session in Optometry by Captain DeShon, one of the staff of the School, aided by clinical instruction given by Dr. Suter at the Episcopal Eye Hospital, and by Dr. L. H. French. Surgical Clinics have been held weekly at the Barnes Hospital, Soldiers' Home, by the Professor of Military Surgery.

Two new features of the present session should be noted: One, the extension of the session from March 1st to April 1st, found necessary to make the course of instruction more complete. The other, the foundation of the Hoff Memorial Prize Medal Fund. The award under this foundation will be made later in the exercises.

Gentlemen of the Class of 1898: At the close of these exercises you are relieved from further attendance upon this School and become subject to the operation of the orders assigning you to the stations, which orders you have already received. In thus passing out from this institution you have the very warmest wishes of your instructors for your future success and welfare.

The address on this occasion will be delivered by a distinguished surgeon and professor, who comes from a distant city to be with us, one who was a member of our corps and rendered faithful service during the civil war, and who has ever kept up his interest in military surgery and in the Army Medical Department, as shown by his presence here today. I have the pleasure of introducing Professor P. S. Conner, of Cincinnati.

ADDRESS TO THE CLASS.

By Prof. P. S. Conner, M. D., LL. D.

Dr. Conner gave an interesting history of the Medical Department of the United States Army since its organization in 1789. He described the important services rendered, not only to the army, but to science, literature and civilization by surgeons in this department, and paid a tribute to those great achievements, The Medical and Surgical History of the War of the Rebellion, and The Index Catalogue of the Library of the Surgeon-General's Office.

At the conclusion of Dr. Conner's address, the Surgeon-General, Brigadier-General George M. Sternberg, presented the Certificates of Attendance to the student-officers in the order of their standing, which was as follows: Assistant Surgeons Higley, Page, Clayton, Ashford, Webber, and Rauchfuss.

The Surgeon-General then gave the history of the Hoff Memorial Prize Medal and a detailed account of the services rendered by Asst. Surgeon Alexander H. Hoff, U. S. A., (the father of the donor) particularly in the transport of the wounded during the civil war. The medal was then awarded to Asst. Surgeon B. S. Higley, Jr.

The exercises concluded with an invitation from the Surgeon-General for the visitors to inspect the school and laboratories.*

*An interesting account of the Army Medical School appeared in the National Medical Review, January, 1898.

Selections.

Camp Hygiene.

The author remarks that one peculiarity of military life is that very many persons are compelled to live together in a comparatively restricted space, where shelter, food and water are often difficult to obtain. In quartering troops upon a community, the soldiers must share the advantages and disadvantages of the dwellers in that community; and it would be well for a medical officer to pass upon the hygienic character of the houses to be occupied before soldiers are assigned thereto. In time of peace, camps may be either permanent or temporary, but it is in the presence of the enemy that camps and bivouacs become matters of the first importance from the standpoint of the medical officer. In pitching a camp the first matter requiring attention is the selection of a site, and it is necessary that the location chosen should be upon dry ground and protected to some extent from wind and weather. Tents, huts or barracks may be employed to provide the troops with cover. A tent should not be too heavy, should be easy to raise and lower and yet be substantial; it must be roomy, water-tight and provided with some arrangement for ventilation. The floor must likewise be made and kept dry either by the use of boards or waterproof cloths, or a superficial layer of earth under the tent may be removed and replaced by sand. The tent covering should be light, easy to wash and impervious to moisture. In severe weather the tent covering may be doubled, or where this is impossible, the sides of the tent may be spread over with straw, boughs of trees or even with snow. The best way of heating a tent is by means of a primitive stove built of bricks or stones. In hot weather the tent may be made more comfortable for its occupants by sprinkling the covering with water or shading it with boughs or trees. Tents are preferable to any other form of bivouac in mild seasons, but are of no use for permanent occupation. The ground underneath them soon becomes contaminated, and the tent must be frequently disinfected and moved about from place to place. Huts, which are often found useful in war, are preferably built of wood, straw, brushwood or clay. The earth under them should be dry, and particular attention should be paid to their ventilation. The underground hut is warm but unhealthy. The experience of the French in the Crimea, of the Russians in the Balkans, and the Germans before Metz and Paris has shown that with dry ground, good ventilation, and sufficient heat, huts serve as excellent dwellings for troops in the field; but, on the contrary, if located on damp ground, illy ventilated and not kept clean, they may become the source of severe epidemics. Barracks for troops engaged in active warfare were first employed by the English in the Crimea with a most favorable effect upon health. They were used still more extensively by the French behind the walls of Paris in 1870–'71. Usually, plain wooden structures are employed, but they are inflammable, easily infected and costly. The author mentions several varieties of barracks which may be used on field service, and calls special attention to that of Döcker which is light, easy to erect, affords shelter against all kinds of weather, and furnishes the men with comfortable, healthy and attractive dwellings. They are 3.5 m high, 6 m broad and 30 m long, have an air capacity of 9 to 10.5 cubic meters per head and can accommodate 60 to 64 men. Their method of construction furnishes a sufficient change of air. In the choice of a location for a camp, nothing is more important than the securing of an abundant, wholesome and convenient water supply. Flowing water must always be viewed with suspicion for fear of contamination above the camp. Boiling renders bad water practically harmless but makes it flat. Among filters the Bergfeld is especially to be recommended, and to purify water by chemicals, permanganate of potassium, alum and chloride of iron may be utilized. The camp kitchen should be located some distance from the tents and to leeward of them. All offal and waste

connected with the preparation of food should be treated with lime and buried. The latrines should be placed 100 m behind the camp, and the accumulated excrement should every two days be disinfected with lime and covered with a layer of earth 20 cm deep. All waste about a camp must be kept out of streams, and the camp itself, a most favorable place for the development and propagation of all sorts of disease germs, should be kept scrupulously clean. Kemeny (J.) Ueber Lagerhygiene. Militærarzt, Wien, 1897, xxxi, 234; 248.

The Effects of Modern Projectiles in Warfare.

Mr. Davis, who was attached to The National Fund for Greek Wounded, recently read a paper before the Medico-Chirurgical Society of West London upon "Gunshot Injuries in the late Greco-Turkish War." According to the author there were three kinds of rifles used in this war, the Greeks employing the French Le Gras weapon with a chassepot lever action, while the Turks were armed chiefly with the Martini-Henri, although some brigades were furnished with the German Mauser magazine rifle. Davis never saw a single wound with a Mauser bullet lodged in it. Incidentally the author mentions that in the recent Chitral expedition the English noticed that the Lee-Metford bullet failed to stop the rush of the tribesmen. The soldiers, however, quickly learned to remedy this by cutting through the nickel nose of the bullet or rubbing it against a stone, thus exposing the soft lead core. The "Dum Dum" bullet, so called from the place of its manufacture in India, was used for the first time during the present frontier war. This missile, a modification of the latest Lee-Metford bullet, resembles a slate pencil, has a nickel shield, but is thinner than the Lee-Metford, and the soft nose is flat and does not project so far from the nickel envelope. On impact it collapses like a concertina, and makes such a ghastly wound that its use would probably be prohibited in civilized warfare. The author was much struck with the comparatively small damage done by rifle bullets in the Greco-Turkish war. In most cases the missiles passed clean through the wounded men, leaving only a minute black aperture at each end of its track. Davis (H. J.) The effects of modern projectiles in warfare. Med. Press. & Circ., Lond., 1898, lxv, n. s., 63.

Medical Statistics of the French Army During the Year 1895.

The sanitary state of the French troops was not as satisfactory as during the previous year, owing partly to the prevalence of the grippe and partly to the morbidity and mortality among young recruits of the so-called second category. General Mercier, at that time Minister of War, in order to increase the number of effectives and to prevent the unnecessary withdrawal of many of the best men from among the rank of combatants, directed that a certain proportion of conscripts be selected, who, without possessing all the necessary aptitudes for military service, might yet act as cooks, storekeepers, workmen, etc. It was intended that these men should receive special instruction, and should serve only in the positions which they were physically capable of filling. But this was not possible of execution in all cases, and most of the recruits in this second category were under the same obligations and subjected to the same training and hardships as those better equipped for so arduous a life. In 1895 the army consisted of a total effective of 544,459 men with 489,785 present for duty. The most commonly observed diseases were laryngitis and bronchitis (due to grippe), rheumatism, typhoid fever, diarrhœa, dysentery, malaria, tuberculosis, scarlatina and measles, in the order named. There were 3,736 deaths (or 6.86 pro mille), 2,880 in the army of the interior, 715 in that of Algeria and 141 in that of Tunis. The affections which caused the largest mortality were: 1. typhoid fever; 2. tuberculosis, and 3. grippe; and then in the order named, various internal and surgical affections, traumatic injuries, pneumonia, bronchopneumonia and capillary bronchitis, scarlatina, pleurisy, dysentery, malaria,

meningitis (non-tubercular), measles, diphtheria, erysipelas and acute bronchitis. There were 52 sudden and 221 accidental deaths, of which 56 were due to drowning, 28 to falls of various kinds, 18 to falls from horseback, and 2 to gymnasium accidents. There were also 135 suicides most of which occurred in June, January and April. Of typhoid fever there were 4,875 cases or a total morbidity of 8.95 pro mille; that in France being 6.42 pro mille, in Algeria 29.46 pro mille, and in Tunis 20.78 pro mille. Most of the cases occurred in September and October and were attributed to contaminated drinking water. There were 826 deaths from this disease of which 483 took place in France. The year 1895 gave the lowest morbidity and mortality from typhoid fever so far observed in the French army. From grippe there were 484 deaths. There were 3,826 hospital admissions due to tuberculosis, a morbidity of 7.03 pro mille and 618 deaths, a mortality of 1.4 pro mille. During 1895 tuberculosis alone caused a loss to the army (due to deaths and discharges) of 9.48 pro mille. This dreadful malady has been slowly increasing from year to year and in 1895 reached the maximum thus far noted. The following were the forms in which this disease was encountered: pulmonary tuberculosis the most frequent, then pleural, laryngeal, meningeal, and cerebral, acute miliary and, lastly, abdominal tuberculosis. A. Statistique médicale de l'armée francaise pendant l'année 1895. Méd. mod., Par., 1897, viii, 811.

The Purification of Drinking Water on Campaign.

Laveran mentions the well known fact that the water which soidiers drink on a campaign, especially in the Tropics, is almost uniformly bad; and the filters that can be utilized for its purification are either very difficult of transport or are liable to injury or deterioration, and at best make the water clear but do not eliminate the contained pathogenic bacteria. Of course boiling is a satisfactory measure, yet it is difficult to persuade an exhausted soldier, perishing with thirst, of the wisdom of waiting until a fire is made, water boiled and finally cooled. Laveran alludes to the extended experience of Lapeyrère in endeavoring to discover a practical and efficient way of providing for the troops in the colonies a water of good quality. The latter has suggested a plan, essentially a combination of several already in use, in which the water to be purified is treated with a powder, the most active element of which is permanganate of potassium (one part), while the other ingredients are carbonate of soda (4 parts), alum (3 parts) and quick lime (8 parts). The alum decomposes in the presence of the lime with the production of calcium sulphate. The addition of carbonate of soda results in the formation of sulphate of soda and calcium carbonate. From 0.25 to 0.50 gm of this powder is added to a litre of the water to be purified, which is then agitated. If the pink color persists, enough of the powder has been added: if it disappear, the original quantity of the medicament is repeated, if necessary, three or four times. The next step is filtration through a fine sponge or other porous material in a small specially made filter of aluminium or nickeled brass. It is claimed that by this combined process, pathogenic bacteria are entirely removed from water and it is otherwise made wholesome. While Laveran approves of this method in a general way, he believes that of the chemical reagents potassium permanganate alone is sufficient for the purpose. He thinks, however, that water if it must be purified in the field, should best be done in quantity for a number of men (squadron or company) and not left to the initiative of the individual. Laveran. Sur un travail de M. Lapeyrère ayant pour objet la purification de l'eau de boisson du soldat en campagne. (Rap.) Bull. Acad. de méd., Par., 1897, 3. s., xxxviii, 585.

The Goldschmidt Ambulance and Litter System.

This ambulance and litter system, which is almost identical with that used in the Austrian Army, is described at great length and illustrated by many photographs. The essential feature of

the ambulance is the remarkable way in which space is to be utilized. The wounded soldier is brought alongside upon a litter. Slides are pulled out upon which the litter is placed, and it is then pushed within the vehicle. The middle portion of the ambulance accommodates four such litters, two above and two below; the upper pair, after being introduced at the bottom of the ambulance, are pulled upward with ease into the proper position by one man. The four litters each bearing an injured person can be placed in the ambulance all from the same side or introduced simultaneously from opposite sides. There are eight litters with each ambulance four of which go to form its sides. The vehicle further contains an operating table, canvas curtains to be utitized as a tent or screen, a petroleum apparatus and kettles for cooking, two reservoirs each containing thirty litres of water with an attachment by which this water is to be used for irrigating wounds, a refrigerator, all the necessary instruments, splints, bandages and dressings, a roof which may be taken off and used as a skiff, and countless other appliances. The interior arrangements of the ambulance can be altered to suit the number and character of the wounded destined for transport. Thus it may be adjusted to accommodate 6 or 7 badly wounded and 2 or 3 slightly wounded, or 2 or 3 severely and 12 to 13 slightly injured. The vehicle is very substantially built and the various changes in the relation of its parts can be made in a moment. The litters are like those in use in the Austrian Army but weigh only 8.4 kg with a carrying capacity of over 100 kg. Sanitätswagen und Tragbahre System Goldschmidt. Med. Cor.—Bl. f. d. Krankenh.***Deutsche., Berl., 1897, 26; 34.

The Instruction of Stretcher Bearers and their Duties in War.

The following opinions on this subject are expressed by Surgeon Golubeff, Russian Army. The first duty of the stretcher bearers is to render such aid as time and place permit and the necessities of modern surgery demand. 1. They should make wounds and injuries as far as possible painless; but they should remember that to attempt to apply a permanent dressing in the field adds to the soldier's suffering and consumes valuable time. It is sufficient, for example, to place an injured arm in a sling and fasten it lightly to the body, or to lay a wounded leg upon a board between two folded cloaks. If a more secure support is necessary in the case of the lower extremity, sticks, rifles, etc., may be utilized to carry out the principle of the fracture box. 2. They must stop hemorrhage. Although primary hemorrhage from gunshot wounds is rare, nevertheless the bearers must know how to control it when it does occur by the application of digital pressure, bandages and tampons or tourniquets, and sufficient anatomical knowledge should be imparted to enable them to locate and apply pressure upon the main artery above the seat of injury. 3. The bearer must learn to be as clean in the handling of wounds as possible, and with aseptic hands must open the emergency dressing package and apply the necessary dressings and bandages. 4. The bearer should be rapid in his movements, that the wounded be brought quickly to the dressing station, and he should, therefore, waste no time in endeavoring to apply complicated dressings on the field. Many lives can be saved by a prompt tracheotomy, trephining or laparotomy. In the "Instructions" it is required that the bearers of the regiment should transport the wounded between the fighting line and the first dressing station, and that the division stretcher bearers should also act between these points, as well as between the first and the principal dressing station. In time of war 612 bearers with 153 stretchers would thus operate for each division on the line of battle. When the old form of rifle was employed the loss to a division averaged 3000 men, 2000 being wounded, of which number 1000 needed to be borne from the field on stretchers. It would require seven hours of constant labor for the bearers to transport this number of men from the field to the first dressing station. If the battle has lasted for seven hours, it would therefore require

seven hours more, provided the work of removal did not begin until the cessation of hostilities, before the last of the wounded had been carried to where assistance could be obtained. By this time the injuries received in action would either have proved fatal or else would be covered with clots. If the latter, immediate transfer to the hands of the surgeon would be more advisable than to delay until a temporary and imperfect dressing was applied. If, on the conrary, the bearer does not wait, but begins the removal of the injured during the action, there will be no time for the critical examination of wounds or the dressing of injuries; but the bearer must act skillfully and quickly in order to remove the wounded men as rapidly as possible from under fire. The junior medical aids at the dressing stations must understand how to apply all kinds of splints and dressings, must be conversant with the principles and practice of antisepsis and must be familiar with the lifting and handling of the injured. Golubeff believes that the "Instructions" issued for the guidance of the bearers in the Russian army are too complicated and are filled with too many useless details while many essentials are omitted altogether. The bearers should be taught especially manual skill in the handling of the wounded and the proper care of dressing and bandaging material. The author further suggests that there should be established for each regiment, at the nearest and most accessible protected points, several simple and easily movable dressing stations, the officer in command of the troops notifying the commandant of the sanitary service of the proposed line of action and the ground likely to be embraced therein. *It is also recommended that the bearers bring in the wounded as rapidly as possible, both during the action and after it without applying any dressings except in cases of evident hemorrhage. It is only necessary for the regimental bearers to know how to place and carry the injured upon stretchers, enough of antisepsis to teach them to avoid touching wounds, except in case of necessity and the application of a few emergency dressings.** The division bearers should be occupied only at the dressing stations and in dispatching the wounded from point to point, and should be well versed in the methods of applying both temporary and permanent dressings, in the rules of antisepsis and in the transferring of injured men from stretcher to ambulance, etc. Finally, the writer thinks that the instruction of bearers should be carried on in summer time in the field and not during winter in cramped quarters, nor at the time when the medical officers are away superintending the examination of recruits. Golubeff (F.) (On the instruction of stretcher carriers among troops, and on their activity in time of war.) Voyenno-med. J., St. Petersb., 1897, clxxxx, med.-spec. pt., 337–359. (*Italics ours; Ed.)

The Outlook for the Efficiency of the Sanitary Service of the German Army in a Future War.

Eilert (Generalarzt I Cl. a. D., Royal Prussian Army) in a lengthy article upon this question, says, that to arrive at a satisfactory answer, it is necessary to ascertain if the efficiency of the Prussian Service was all that could have been desired in the last great war, what changed conditions in warfare have now to be encountered, and what alterations in the service are necessary to meet these conditions. A glance at the report of the Medical Department in the war of 1870 71 shows that in the main the service was excellent. There were some failures, some weaknesses that could have been corrected; others which were unavoidable even with a perfectly equipped and faultlessly managed sanitary service. For example, at the battle of Colombey-Nouilly, which was fought on August 14th., 1870, the First Prussian Army Corps had 3,500 men wounded. The fight began at 5 p. m. and lasted until 10 p. m. The ground around Nouilly was very steep and irregular and covered with vineyards. The search for the wounded was not begun until 6 a. m. the next day, and the last of the badly wounded was not removed from the field until 4 p. m. Aside from the resultant suffering, many of these with wound fractures of the legs could not retain their urine and fæces, and their wounds were consequently badly con-

taminated. Search on such broken ground was impossible on the night of the battle, but should have been begun, and here the avoidable error arose, much earlier on the following morning. On numerous occasions during this war the wounded were left for a long time lying on the field, but whether necessarily or unavoidably does not appear in the medical reports.

The new problems which it will devolve upon the sanitary service to solve depend upon certain altered conditions in warfare the principal of which are the increase in the size of invading armies and the general introduction of the small calibre rifle with mantled bullet and smokeless powder. The effect of the new weapon in increasing the number of the wounded in future actions—an opinion held by many—is after all but a conjecture which experience is as likely to disprove as to prove. Many officers of large experience have told the author that the modern improvements in armament are very likely to diminish the relative number of the wounded, but after all the chief difficulties which will in future confront the field Sanitary Service will not be dependent upon the increase or decrease in the number of the injured men but on certain other conditions.

Quoting from v. Broiczem, formerly major in the Royal Saxon General Staff, the author describes the battle of the future. This will begin with a great artillery duel in which the guns of the attacking force may be supposed, for the sake of illustration, to first silence some of the artillery of the enemy and then be directed against their infantry. In the meanwhile the attacking force has thrown out infantry, which protecting itself as far as possible behind every bit of cover, nevertheless suffers from the fire of the enemy even though at 1,500 to 2,000m, and although the change from large masses to small segregated groups of men has been effected at a great distance from the enemy. The force attacked now sends out a skirmish line in advance whose losses are heavy and whose effectiveness is maintained only by heavy drafts upon the infantry in the rear. The assailants gradually approach nearer and nearer and direct all their available fire upon certain points designated to them in the line of defense (Einbruchstellen). The fire of the defenders becomes weaker at these points, and the strength of the assailants being rapidly increased from the rear, as soon as the movement of assault can be no longer concealed, the signal is given and the assailants with a hurrah rush upon the enemy. Since a conflict will rarely begin and end on the same day, night movements will be more frequent than formerly. The new missile may be a humane one when, early in the conflict, the troops are far removed from each other; but at close quarters in the final assault the murderous and rapid fire and the explosive force of the modern bullet will result in numerous and severe bone injuries which will increase the work of the sanitary corps immensely. And moreover, while the relative number of the wounded may not be so great when troops are scattered, nevertheless among solid masses of men, as when debouching from a narrow road, the havoc wrought by the new bullet will be enormous. The main conditions which will influence the efficiency of the medical department in future wars are the long duration of battles and the great size of battle fields. The distance between the combatants will be greater, the time of approach slower, and owing to the manner of attack the infantry wounded will be scattered over vast areas, and it will be the harder to provide aid for them the farther farward the attacking force has advanced. Eilert. Ueber die Aussichten für unsere Thätigkeit in einem Künftigen Kriege. Militærarzt, Wien, 1898, xxxii, 2.

(To be continued.)

The Treatment of Syphilis in the Army by Intra-Muscular Injections of Mercury.

Surgeon-Major Lambkin of the British Army says that this method of treatment has been employed quite extensively especially in India, and he believes that it possesses the following advantages: By the intra-muscular method the soldier can be treated while out of hospital and at his duty for any length

of time thought necessary; the medication is absolutely in the surgeon's hands and he knows whether it is being used properly or not; mercury given hypodermically produces neither diarrhœa nor indigestion; when this plan of treatment is carried out the State becomes a distinct gainer, for the time spent in hospital is lessened and the chances for readmission are reduced to a minimum. On acquiring syphilis the soldier is kept in hospital only as long as any of the more active primary or secondary symptoms exist. When these disappear he is discharged, allowed to resume his duty and ordered to report to the hospital authorities on one day each week for treatment. This does not involve a loss of more than one-half hour a week from active duty. The preparation advocated and used by the author consists of mercury, one drachm; pure lanolin, two drachms, and 2 per cent carbolized oil, one drachm. The maximum dose is 10 minims. He has given over 60 o injections without producing pain or causing abscesses. This mixture requires a certain amount of care in preparation and is somewhat affected by extremes of heat and cold. Sozoiodol of mercury may be substituted for it, prepared according to the following formula: Sodii iodidi, gr. 10; hydrarg. sozoiodol, gr. v; aquæ destil., 200 minims; 10 to 15 minims at each injection. This remedy is more painful than that previously mentioned, but the pain soon passes away and leaves no ill result. It is likewise free from the disadvantages pertaining to the mercurial cream but is not so rapid in its action. The writer prefers the gluteal region for the site of the injection, and uses a vulcanite syringe with platino-iridium needles. The treatment with either preparation must continue for months until all signs of the disease have disappeared. Lambkin (Surgeon-Major, F. J.) The treatment of syphilis in the army by intra-muscular injections of mercury. Brit. M. J., Lond., 1898, i, 485.

Reviews.

Military Surgical Exerience in the War between China and Japan, 1894-'95.

Dr. Haga, Staff Surgeon, Japanese Army, gives his experience as surgeon of the 3rd division, 2d army corps, operating against the Chinese in Corea and Manchuria. The division, 12,859 men, landed in two detachments, one on the south and the other—to which the author was attached—at Gensan on the north coast of Corea. The latter moved forward about the middle of August, 1894, to attack the fortress at Pyong-Yang. The route was through an uninhabited region over high mountains, where the field pieces and the entire trains had to be transported on the backs of Corean pack horses and oows. The journey was slow and difficult lasting 14 days, during which the soldiers lived on rice and salt with a very small quantity of canned meat, but the water was good. After the fall of Pyong-Vang and the battle of Yalu river, the detachments rejoined in November and operated together thereafter, taking part in 11 principal engagements, until the end of the war in March 1895. The author remained with his division throughout and when active hostilities ceased took station at the reserve hospitals, thus having an opportunity to observe and treat a large number of wounded soon after the receipt of their injuries.

The Japanese infantry were armed with the old Murata, a breech-loader of 11mm lead bullet and the new 8mm magazine Murata rifle with copper cased bullet and smokeless powder. The Chinese were provided with some machine guns of 57mm caliber and a great variety of small arms allold pattern except a very few 8mm Mausers in the hands of noncommissioned officers and special men. From arms captured and picked up on the field the following were recognized: new and old Mauser, Winchester, Remington, Chápus, Snider, Henry-Martini, Spencer, Howyt-Nebir, Peabody, Borchall, Chassepot, Spantori, and Wall muskets. The bullets varied from 8 to 19mm in caliber and from 14 to 139gm in weight. Thus it is that

nearly all the wounds reported by Haga were made with the old lead bullets and only some 30 more or less doubtful cases with the new small caliber projectile. The report possesses much value however as an illustration of the results of antiseptic methods in military field surgery.

With an average mean strength of 12,859 combatants there were 1,314 killed and wounded, 10.2 per cent. Of those 210 were killed on the field and 1,105 came under treatment, a ratio of about 1 to 5. The proportion of wounds from different weapons was, small arms 90.8 per cent. ; artillery 7.6 per cent., and from side-arms 1.6 per cent. The regional distribution of injuries among those treated was : head and neck 13 per cent.: body, 24.4 per cent. ; upper extremities, 26.7 per cent.; lower extremities, 34.7 per cent. Of the 1,105 wounded under treatment, 108 died of their injuries, 9.7 per cent. In addition to these there were 11,251 cases of sickness from infectious diseases and frostbites with 592 deaths.

Transportation of the sick and wounded was difficult as there were no railroads. The base of the operations was at Schimonoseki in Japan, and as the troops pushed forward, the lines of communication extended by difficult and circuitous routes far into Chinese territory. The wounded were borne back to the first dressing places and hospitals on stretchers by carriers hired for the purpose. Transportation farther towards the coast was accomplished in the same way and by Chinese country wagons, without springs, drawn by horses, mules and oxen. In Corea, where neither horses nor wagons were to be had, the stretchers were carried by 4 men to each, mostly on their shoulders. Wagons brought from Japan could not be used on account of the narrow roads, but in some instances they utilized a sort of wagon called a "jinrickisha," carried on the shoulders of two men as is the custom in Japan. On the coast, hospital steamers were provided but during the severe weather in winter the northern ports of Corea were frozen in and the sick and wounded had to be carried farther south to Talienwan for shipment. Much suffering was caused by exposure to cold and there were over 1,000 cases of frostbite, many of which resulted in gangrene

Among the gunshot wounds treated, about 30 were observed by the author which from their general character appeared to have been made by the small caliber bullet, though the missile itself was not found in any case. In these wounds the openings were very small averaging 4 to 5mm in diameter. The flesh wounds ran a smooth course, healing rapidly by primary union. Those involving the bones of the face were marked by slight splintering and good results. In 2 fatal skull wounds it is interesting to note that the vault of the cranium was extensively ruptured at 1,000m. The shaft of the femur was severely fractured and the pieces widely scattered, but in the epiphyses, the author observed only perforations with radiating fissures. One remarkable case of abdominal wound is related where the supposed small caliber bullet entered close to the navel and passed out at a corresponding level by the side of the spine. "No unfavorable symptoms appeared, the wound healed rapidly and the patient was soon up and about."

In the second division of this report Haga relates his experience in wounds of different regions. Injuries to the brain were followed by very unfavorable results. All cases of perforation and penetration proved fatal. Of the head 67 wounds came under treatment, in 26 of which there was more or less injury to the skull, membranes and brain, mostly of a superficial character. Of the latter 7 recovered finally and were invalided with the usual sequelæ in such cases, headache, vertigo, loss of memory, motor and sensory paralysis and epilepsy. Wounds of the face did remarkably well. Suppuration was scarcely ever observed even where in one case the bullet lodged in the antrum of Highmore. The eyeball was destroyed in 2 cases, 1 of which furnished the only fatality. In 74 face wounds treated, 44 men returned to duty, 18 were invalided, and 1 died. There were 14 wounds of the neck. The rings of the trachea received injury in 5, and the larynx in 1. Tracheotomy at the dressing place was performed in 2 of the

cases. Bronchial catarrh but no pneumonia complication arose. Permanent use of the canulæ was required for contracting scar and stricture in the trachea. Of the 14 cases, 4 died. In 2 shot injuries of the spine both proved fatal.

In the shoulder 68 wounds are reported, viz.: 18 flesh, 31 perforating, and 19 penetrating. Of the latter 7 entered the lung and 5 the bone. Lodgement of the bullet in the lung gave rise to abscesses and 5 of the 7 cases ended fatally, while 2 recovered.

A total of 89 chest wounds included 46 penetrating and perforating injuries to the lung. Wounds through the large bronchi and blood vessels at the root of the lung were fatal at once or within the first day after injury. Those in the outer portion of the lung on the contrary, often made good recoveries. Wound openings were small except when fracture of the ribs occurred and then they were large and irregular. The diagnosis of penetration was not always easy: lung indications were often slight and hemoptysis sometimes resulted from concussion. Pleuritis with effusion was treated by puncture and pyemia by rib resections and irrigation with warm boric solution. There were 16 deaths, a mortality of 34.7 per cent. from penetrating wounds. (In the Franco-German war it was 56.7 per cent.)

Gunshot wounds of the abdominal parietes ran a favorable course without exception, but of 47 perforating wounds 33 ended fatally, 70.2 per cent., mostly from escape of visceral contents and septic peritonitis. In 5 or 6 cases injury extended only to the peritoneum and more favorable results were obtained. Laparotomy Haga regarded as impracticable and scarcely justifiable under the conditions presented on the field and at the field hospitals. With the usual lack of time, proper material, competent assistants and suitable temperature, very doubtful results can be expected from such an operation, and meanwhile other wounded are left waiting for much needed assistance. He operated in 2 cases, however, later on, 1 a perforation of the lower intestines and the other of the bladder, both speedily fatal.

Bone and joint injuries treated were as follows:

Fractures.		Died.	Joint wounds.		Died.
Hand,	33	0	Wrist,	6	0
Forearm,	24	0	Elbow,	16	0
Arm,	14	1	Shoulder,	4	0
Foot,	12	0	Foot,	4	0
Leg,	24	1	Knee,	16	4
Thigh,	24	11	Hip,	1	1
Total,	131		Total,	47	

In 86 gunshot fractures of the diaphyses but 13 were fatal—15.1 per cent. (War rebellion 18 per cent: 1870-71, 23.2 per cent.) These remarkably good results are attributed in part to antiseptic methods of treatment. But 12 cases of death from hemorrhage were noted among the wounded, all delayed primary or secondary bleeding and all from injury by artillery missiles.

Disease complications arising during wound treatment were from typhoid fever, dysentery, bronchial and intestinal catarrh, frost gangrene and, in only 2 cases, from malaria. Haga saw among the wounded 5 cases of rupture of the eardrum from the concussion of artillery and shell explosions. Among the cases of wound infection were 8 of septicemia and pyemia, all fatal, 4 of acute purulent edema, 2 fatal, and 1 of tetanus, but no cases of erysipelas. In spite of antiseptic precautions many wounds became infected during transport on long journeys to the coast. Haga thinks that the heat of a bullet caused by friction in the barrel and by impact, frees it from infecting organisms as thoroughly as a steam sterilizer, and that wound infection results from clothing and other foreign bodies carried into the tissues. von Coler's and Schjerning's experiments show that with single shots on the human body the highest temperature of the bullet even at close range and on hard bone was about 95° C. but at rapid fire (100 shots in 2½ minutes) the new bullet was heated to the melting pont of lead (334°).

In the treatment of wounds modern antiseptic methods were pursued and to this is attributed the very favorable results accomplished. Haga found the individual dressing packages of great value. They were applied as provisional dressings sometimes by the soldiers themselves or by trained assistants. At

the first dressing places the surgeons attended to the arrest of hemorrhage and emergency operations, the application of splints and more permanent dressings. The principal dressing material was sublimate and iodoform gauze, borated cotton and charred rice straw, which was prepared and furnished in small sterilized gauze pads. The latter is highly praised as a light, cheap and convenient absorbent dressing for clean or suppurating wounds. The supply brought along being exhausted wheat straw was charred and used in like manner. For fractures plaster of paris, light wooden splints, Middeldorff's triangle and others improvised by themselves were used. In the field, instruments were sterilized in 2 per cent. carbolic acid. A small steam sterilizer was brought along and used with advantage at the field hospitals.

In regard to operations a very conservative course seems to have been pursued throughout. In addition to minor operations there were 2 amputations each of the thigh and leg (1 for frost gangrene) 1 bone suture of the humerus, 1 resection shoulder joint, 2 partial of the elbow, 2 tracheotomies, 2 laparotomies, paracentesis and rib resections. In some cases of extensive splintering in the bones of the leg and thigh selected for amputation, the operation was abandoned for lack of time, and the author was astonished afterwards to find them healed with good results. Even severe bone injuries did well. Small, loose splinters were removed, larger ones left for later intervention in case sequestra formed. A short clinical history of interesting cases closes the report, which is accompanied by a map of the seat of war, temperature charts and illustrations of missiles. Kriegschirurgische Erfahrungen aus dem japanisch-chinesischen Krieg 1894-95, von Dr. Haga Stabsarzt der Kaiserlich Japanischen Armee (Tokio). Langenbeck, Archiv für Klin. Chirurg. 55, 1897.

Offical List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from February 20, 1898, to March 19, 1898.

Captain Francis J. Ives, Assistant Surgeon, is relieved from duty at St. Francis Barracks, Florida, and ordered to Fort Wingate, New Mex., to relieve Captain Adrian S. Polhemus, Assistant Surgeon.

Captain Polhemus upon being so relieved is ordered to Fort Columbus, New York.

Captain William E. Purviance, Assistant Surgeon, is relieved from duty at Fort Columbus, N. Y., and ordered to Fort Morgan, Alabama.

Captain Allen M. Smith, Assistant Surgeon, will be relieved from duty at Fort Reno, Oklahoma Ty., upon the arrival there of 1st Lieutenant Henry A. Webbes, Assistant Surgeon, and ordered to Fort Hamilton, New York.

1st Lieutenant James S. Wilson, Assistant Surgeon, is relieved from duty at Fort Clark, Texas, and ordered to Fort Caswell, North Carolina.

The order assigning 1st Lieutenant Thomas S. Bratton, Assistant Surgeon, to Fort Leavenworth, Kansas, is revoked; and he is relieved from duty at Fort Niobrara, Nebraska, and ordered to Tybee Island, Georgia, for duty.

Leave of absence for three months to take effect on or about April 1, 1898, is granted Major Joseph B. Girard, Surgeon, Jefferson Barracks, Missouri.

Leave of absence for one month, on surgeon's certificate of disability, is granted Captain Madison M. Brewer, Assistant Surgeon, to take effect upon the expiration of the ordinary leave of absence.

Leave of absence for six months, on surgeons certificate of disability, is granted Captain Norton Strong, Assistant Surgeon, to take effect upon the expiration of the ordinary leave of absence granted him.

1st Lieutenant Thomas S. Bratton, Assistant Surgeon, upon the arrival at Fort Niobrara, Nebraska, of 1st Lieutenant Brainard S. Higley, Jr., Assistant Surgeon, will be relieved from duty at that post, and ordered to Fort Leavenworth, Kansas, for duty.

The following named medical officers are relieved from duty at the Army Medical School in this city to take effect upon completion of the course at the school ending April 1, 1898, and ordered to take station as follows:

1st Lieut. Henry Page, Asst. Surgeon, Presidio, of San Francisco, Cal.
1st Lieut. Bailey K. Ashford, Asst. Surgeon, Fort Sam Houston, Texas.
1st Lieut. Henry A. Webbes, Asst. Surgeon, Fort Reno, Oklahoma Ty.
1st Lieut. Jere B. Clayton, Asst. Surgeon, Fort Clark, Texas.
1st Lieut. Brainard S. Higley, Jr., Asst. Surgeon, Fort Niobrara, Nebraska.
1st Lieut. George Rauchfuss. Asst. Surgeon, Fort Apache, Arizona.

A board of Medical officers to consist of Colonel Dallas Bache, Assistant Surgeon General; Major Walter Reed, Surgeon; Major James C. Merrill, Surgeon; Captain William H. Arthur, Assistant Surgeon; 1st Lieutenant Alexander N. Stark, Assistant Surgeon; is constituted to meet at the Army Medical Museum Building in this city on Monday, May 2, 1898, at 10 o'clock a. m. for the examination of candidates for admission to the Medical Corps of the Army.

By direction of the President, Major William C. Shannon, Surgeon, will upon the expiration of his present sick leave of absence, report in person to the president of the Army retiring board at San Francisco, Cal., for examination by the board.

Leave of absence for four months, with permission to go beyond sea, to take effect on or about March 15, 1898, is granted Lieutenant Colonel William D. Wolverton, Deputy Surgeon General, Chief Surgeon, Hdq'rs Dept. of the Columbia.

Leave of absence for two months, with permission to go beyond sea, to take effect on or about March 1, 1898, is granted Major Henry S. Kilbourne, Surgeon, Madison Barracks, New York.

Captain Paul F. Straub, Assistant Surgeon, ordered to accompany Co's A. and G. 14th Infantry, to Skagway, Alaska, and there take station.

1st Lieutenant John S. Kulp, Assistant Surgeon, ordered to accompany Co's B. and H. 14th Infantry, to Dyea, Alaska, and there take station.

Official List of Changes in the Medical Corps of the U. S. Navy from February 20, 1898, to March 19, 1898.

March 2—Surgeon F. W. F. Wieber, detached from Naval Hospital, Norfolk, Va., and ordered to the "Miantonomoh," March 10.

Surgeon G. P. Lumsden detached from special duty at Norfolk, Va., and ordered to the "Franklin."

Passed Assistant Surgeon B. R. Ward, ordered to the "Katahdin," March 1.

Passed Assistant Surgeon I. W. Kite, detached from the "Franklin" and ordered to the Naval Hospital, Norfolk, Va.

Surgeon L. B. Baldwin, detached from the "Puritan," March 17, and ordered home with two months' leave.

Surgeon J. D. Gatewood, detached from duty at the Naval Museum of Hygiene, Washington, D. C., March 15, and ordered to the "Puritan," March 17.

Assistant Surgeon C. D. Kindleberger, detached from the "Olympia," and ordered home with two months' leave.

Surgeon N. H. Drake, detached from duty with the "Minneapolis" and "Columbia" and ordered to the "Minneapolis," March 15.

Surgeon C. G. Harndon, ordered to the "Columbia," March 15.

March 10—Medical Inspector W. S. Dixon, detached from the "Brooklyn" and ordered at once to the hospital at Norfolk, Va., for treatment.

Medical Inspector P. Fitzsimons, detached from duty as a member of the Board of Inspection and Survey, Washington, and to the "Brooklyn."

March 17—Surgeon J. E. Gardner, ordered to the "Dolphin," March 24.

Passed Assistant Surgeon T. W. Richards, detached from the New York Navy Yard, and ordered to the "Machias," March 22.

Passed Assistant Surgeon M. R. Pigott, detached from the "Machias," March 22, proceed home and wait orders.

Official List of the Changes of Station and Duties of Commissioned Officers of the U. S. Marine Hospital Service.

Banks, C. E., Surgeon—Detailed as delegate to represent Service at National Pure Food and Drug Congress.—March 1, 1898.

Kinyoun, J. J., Passed Assistant Surgeon—Detailed as delegate to represent Service at National Pure Food and Drug Congress. —March 1, 1898.

Brown, B. W., Passed Aassistant Surgeon—To proceed to Birmingham, Ala., for special duty.—February 25, 1898.

Stewart, W. J. S., Passed Assistant Surgeon—To poceed to Fair Oaks, Arkansas, for special duty.—February 28, 1898.

Parker, H. B., Assistant Surgeon—To proceed to New York, N. Y., for duty and assignment to quarters.—March 2, 1898.

Board convened to meet at Washington, D. C., March 2, 1898, for the physical examination of officer of the Revenue Cutter Service. Surgeon C. E. Banks, Chairman, and Passed Assistant Surgeon G. T. Vaughan, Recorder.

Bailhache, Preston H., Surgeon—To proceed to Cape Fear Quarantine, Southport, N. C., as inspector.—March 8, 1898.

Peckham, C. T., Passed Assistant Surgeon—Upon being relieved by Passed Assistant Surgeon W. J. S. Stewart, to proceed to Pittsburg, Pa., and assume command of Service.—March 8, 1898.

Pettus, W. J., Passed Assistant Surgeon—Relieved of command of Service at Norfolk, Va., and to remain in command of Cape Charles Quarantine.—March 10, 1898.

Magruder, G. M., Passed Assistant Surgeon—To rejoin station, Memphis, Tenn., March 8, 1898.

Wertenbaker, C. P., Passed Assistant Surgeon—To proceed to Middleboro, Ky., for special Temporary duty.—March 10, 1898.

Brown, B. W., Passed Assistant Surgeon—To proceed to Norfolk, Va , and assume command of Service.— March 7, 1898.

Stewart, W. J. S., Passed Assistant Surgeon—Upon being relieved by Passed Assistant Surgeon G. M. Magruder, to rejoin station Vineyard Haven, Mass.—March 8, 1898.

Oakley, J. H., Passed Assistant Surgeon—Granted leave of absence for one month.—March 4, 1898.

Hastings, Hill, Assistant Surgeon—To rejoin station, New Orleans, La.—March 8, 1898.

von Ezdorf, R. H., Assistant Surgeon—To proceed to New Orleans, La., for duty and assignment to quarters.—March 4, 1898.

Foster, M. H., Assistant Surgeon—To proceed to Chicago, Ill., for duty and assignment to quarters.—March 10, 1898.

Appointments.

Herman B. Parker of Pennsylvania, commissioned as Assistant Surgeon, February 26, 1898.

Rudolph von Ezdorf of the District of Columbia and Milton H. Foster of Pennsylvania, commissioned as Assistant Surgeons.

Drs. L. L. Lumsden and J. F. Anderson of Virginia, have been commissioned by the President as Assistant Surgeons, and assigned to duty at Boston, Mass., and Mobile, Ala., respectively.

Passed Assistant Surgeon A. C. Smith who has been taking a three months' course of instruction in the Hygienic Laboratory rejoins his station, Gulf Quarantine, on the 25th inst.

Surgeon C. E. Banks sails March 24, on S. S. "Normannia," en route to Madrid to represent the U. S. M. H. S., at 9th International Congress of Hygiene and Demography, April 10-17, 1898.

The following officers registered at the office of the Supervising Surgeon General during March: Surgeon H. W. Austin, March 15th; Surgeon H. R. Carter, March 15th; Surgeon Fairfax Irwin, March 15th; P. A. Surgeon G. B. Young, March 16th; P. A. Surgeon B. W. Brown, March 10th; Asst. Surgeon Seaton Norman, March 3rd.

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Original Articles.

ERRORS IN DEATH RETURNS FROM MALARIAL AND TYPHO-MALARIAL FEVERS: TYPHOID FEVER THE PREVAILING CONTINUED FEVER OF WASHINGTON.

BY W. W. JOHNSTON, M. D.,
Washington, D. C.

In no department of medicine is there more confusion of definition and understanding than in the case of the specific continued fevers. A dozen observers will have as many different opinions about the meaning and classification of these fevers, and the same facts will receive a dozen unlike interpretations. In order to have our mortality statistics and statistics of prevalence of any value at all, some uniformity of knowledge must be established; the only question is as to how such uniformity with a basis of truth can be brought about.

Malarial Fevers.

In the mortality statistics of Washington there are some figures that show a very general prevalence of opinions which are not in accord with what may be called the "best authority." Such authority holds that outside of certain localities malarial fevers are rarely fatal. It is unnecessary to quote authors in support of this statement. Intermittent fever if recognized and treated is speedily cured; "simple remittent fever in itself does not involve danger to life," (Flint), the pernicious form "still presents itself occasionally in the north, but is much rarer than thirty years ago," (Tyson), and although deaths from such forms were occasionally seen in this city twenty years ago, they are certainly much rarer now. It is not to be supposed, in a city where medical aid is so readily obtained and an appropriate treatment so quickly applied, that any considerable number of deaths can result from neglect or improper treatment.

In view of the slight fatality of malarial fever everywhere in the central United States, of the lessening prevalence of the disease, and especially of the pernicious forms, in Washington; and in view of the increase in the number of physicians competent to recognize and treat this disease, the conclusion may be drawn that the number of fatal cases in this city is necessarily small.

But here are some of the figures as given in the Report of the Health Officer, and based upon the certificates of physicians. For comparison, the mortality from

typhoid fever and typho-malarial fever are also given in parallel columns.

TABLE.

Deaths from Malarial, Typhoid and Typho-Malarial Fevers.—From 1877 to 1897.

	Malarial Fevers.	Typhoid.	Typho-Malarial.
1877	52	82	46
1878	55	101	31
1879	53	74	25
1880	48	84	20
1881	99	67	31
1882	112	120	44
1883	93	92	38
1884	66	76	34
1885	78	124	30
1886	54	128	17
1887	99	116	22
1888	61	168	14
1889	71	170	71
1890	60	208	35
1891	51	208	20
1892	50	183	23
1893	74	187	19
1894	58	191	27
1895	51	187	13
1896	67	228	12

In the twenty years from 1877 to 1897 there were, according to these figures, 1,352 deaths from malarial fever in Washington, an average of more than sixty-seven deaths yearly.

According to the Census of 1890 the annual death rate in Washington per 100,000 population, during the six years ending in 1890, was higher for malarial fever than for scarlet fever, measles, or whooping cough: its fatality was twice as great as scarlet fever and three times as great as measles.

In sanitary district No. 18 (Report of J. S. Billings), this being the section of the city bounded by N street, Massachusetts and Vermont avenues, K street and Rock Creek, the percentage of mortality to 100,000 population was 32.33, the average of the whole city being 44.70. The part of the city north of this extending from T and 15th streets to Rock Creek had a death rate from malarial fever of 36.70. These relatively high figures from parts of the city known to be almost free from malaria, show that certificates of death from this cause are frequently returned.

The same tendency to return malarial disease as a cause of frequent death is seen in the United States Census Report of 1890. In that year there were 18,594 deaths from this cause in the United States. It was less fatal than diphtheria (27,815) and typhoid fever (27,058), but twice as fatal as measles, more than twice as fatal as whooping cough and more than three times as fatal as scarlet fever. In the list of the diseases mentioned it stands third. Additional doubt is thrown on the accuracy of these figures by the fact that the death rate was higher in cities than in the rural districts and that the largest number of deaths was in children under five years of age and among the blacks. As malarial disease is less fatal in cities than in the country, is a rare disease in children under five years of age, and is not often fatal in them, and as it is less destructive to negroes than to whites, these conclusions of the Census figures are very misleading. Typhoid fever is more fatal in cities and is less typical and more difficult of diagnosis in young children and in the colored race.

Whenever careful observations have been made, the conclusion has been reached that malaria is rarely a mortal disease. The total number of cases of malarial disease in the U. S. Navy in 1895 was 913 with only 1 fatal result; there were 31 cases of typhoid fever with 6 deaths. Osler has shown the same thing from the records of various hospitals. In 1890 in the Brooklyn City Hospital there were 18 cases of malaria and no deaths. In the Kings County Hospital there were no deaths from malarial disease in 3,000 patients; in the New York Hospital in 1893, of 1,482 medical cases there were 38 cases of malaria and 1 death from a pernicious form. All this is strong evidence as only the gravest forms of malarial disease find their way to the hospital. Only 3 cases of pernic-

ious malarial fever have been admitted to Johns Hopkins Hospital since its opening. Hospital statistics agree with the experience of most physicians; they certainly agree with my own. I have seen no death from any form of malarial disease for 20 years, and even in the worst days of malarial prevalence here, death from the congestive and hemorrhagic cases was not frequent in my experience.

Malarial disease is undoubtedly very prevalent in certain parts of the city and District. As long as the Anacostia River remains as it is, this prevalence will continue. The few deaths that occur from malaria in this city are no evidence of the great extent of intermittent and other forms of malarial disease and of the immense loss to the efficient strength of the community from this cause.

Typho-Malarial Fever.

By reference to the table it will be seen that a number of deaths are reported annually as due to typho-malarial fever. The largest number was 71 in 1889, the smallest, 13 and 12 in 1895 and 1896. It would appear that the mortality from this cause has not kept pace with the increase in population, for in the 10 years from 1877 to 1887, there were 316 deaths from typho-malarial fever, while from 1887 to 1897 there were 256 deaths only. Typho-malarial fever has either relatively lessened in fatality or the opinion of physicians as to its being a cause of death has undergone some change. The latter part of this question bears examination, for it involves the doubt as to whether there is any such disease as typho-malarial fever. If there is not, we are still far from having correct diagnoses and correct statistics.

A few words of history may be interesting here. In the Transactions of the International Medical Congress, Philadelphia, the following remarks were made by Dr. Woodward :

"In the fall and winter of '61, reports came in of a new form of fever prevailing in our camps of the Army of the Potomac. The Adjutant-General's Office (Dec. 6, 1861,) ordered a board of medical officers to investigate 'whether it is to be considered an intermittent or bilious remittent fever in its inception, assuming a typhoidal type, or a typhoid fever primarily.' The opinion of the Board was that while ordinary typhoid existed, the large majority of cases were 'bilious remittent fevers which had assumed that adynamic type present in enteric fever.' The following spring this mixed form of fever increased in frequency and reached its greatest intensity while the army lay encamped on the swampy borders of the Chickahominy. The best instructed medical men in the United States were among the attending physicians. They recognized that they had to deal with a pathological complex by employing the name of Chickahominy fever.

"I was ordered, in the summer of 1862, to serve on the Board directed to revise the form of sick report. I was fresh from the Army of the Potomac, and had spent the winter with it. I had lain in camp at Yorktown and followed the army up the Peninsula. *I had formed the opinion that the prevailing fevers of the Army of the Potomac were hybrid forms, resulting from the combined influence of malarial poisoning and of the causes of typhoid fever.* I believed the cases received their characters in accordance as the *one or the other of these influences preponderated in the individual*, and that very often the picture was still further complicated by the coexistence of a scorbutic taint. *Full of these opinions I proposed to the Board, as I had previously suggested to the Surgeon-General, to designate the complex condition*

in question by the name typho-malarial fever, and I induced the Board to adopt the name on the sick list."

He regretted he had not urged on the Board the circular letter explaining why the term was adopted. There was no comment on the term and though no especial attention was called to it, there were *23,346 cases reported as typho-malarial fever during following year*, showing how his opinion had been adopted by the medical officers.

Dr. Woodward published a circular in 1863—(Circular No. 15, Surg.-Gen.'s Office, Wash., D. C., Sept. 8, 1863.) In this he says: "Moreover, while a certain amount of uncomplicated enteric and remittent fever certainly did occur, especially at the commencement of the war, the vast majority of the camp fevers were of a mixed character, having undoubted enteric phenomena, variously combined with the periodicity and other peculiarities of malarial disease, and still further modified by the tendency to incipient scurvy, which is the ordinary concomitant of camp diet. *To indicate this mixed nature the term typho-malarial fever*, which I had the honor to suggest to the Department in June, 1862, appears appropriate, and at the present time is coming into general use."

Thus the designation as applied to the army fevers of the war was suggested. It came into general use, first, among army surgeons, and second, in civil practice. Uncertainties as to the nature of fevers which were not clearly typhoid fever or malarial fever, but which possessed certain features of each, were satisfied by the resort to this hybrid term. There can be no question that the belief quickly became general that there was a fever compounded of the two infections, distinct from both, but a pathological entity recognizable by the union of intermittent or remittent features with the adynamic symptoms of typhoid fever. The finding of lesions of enteric fever in fatal cases did not change the diagnosis of typho-malarial fever, on the contrary, the lesion proved the typhoid infection while the symptoms demonstrated the malarial element. In 61 cases of typho-malarial fever reported to the Surgeon-General of the army at this time, 30 had ulceration of Peyer's patches. This view as to the union of the two infections and the creation of a new and distinct form was general and is, no doubt, the opinion of a large number of medical men at the present moment.

Woodward, subsequently to his first publications, explicitly denied that such was his own meaning. The following quotation is from the Transactions of the International Medical Congress, Phila., 1877, page 333. "And this brings me, at length, to answer the question—*Is typho-malarial fever a special type of fever? and I reply, unhesitatingly, that it is not. I, at least, am free from the blame of that error, if any one has fallen into it. In my first published account I expressly denied that it should be regarded as a new disease.* * * * The essential point I wish to impress upon you is the recognition of the group of hybrids between typhoid fever and malarial fevers. * * * I attach far less importance to the employment of the name I have suggested than I do to the recognition of the compound forms of fever which I intended to represent by it. The name is after all a mere matter of choice."

In the discussion that followed, Dr. Bartholow called attention to the fact that Dr. Woodward in his above statements recalls, denies and repudiates what he formerly published. Dr. Wm. Pepper said: "I confess to hesitation as to the propriety of employing a special term to distinguish a disease which is not

itself specific. There is a feeling among physicians that the term "typho-malarial" is convenient, and it is perhaps desirable that for the present at least it should be recognized."

Dr. Smart, in the Medical and Surgical History of the War, has shown what a sudden change of view occurred in the minds of medical officers and how the new term altered the statistics of the prevailing continued fevers. Before the introduction of the term "typho-malarial," 63.4 per cent. of all cases of continued fever among the white troops were returned as typhoid fever; and 34.2 per cent. as "common continued fever." After the term was introduced, typhoid fever had a little over 50 p. c. and typho-malarial a little less than 50 p. c. Typho-malarial fever gained what typhoid lost and both gained from "common, continued fever," which disappeared from the scene. The largest number of cases of typho-malarial fever was reported from those military departments from which the largest number of cases of common continued fever had previously come.

The fatality of typhoid fever after 1862 was 40 p. c., while that of typho-malarial fever was 8 p. c., showing that typho-malarial fever was regarded as a less serious and less fatal form of disease. There was here already a departure from the original meaning of Dr. Woodward, to whom the deadly Chickahominy fever appeared as a new and grave combination of the symptoms of typhoid fever, malaria and scurvy. As Dr. Smart says, typhoid fever, with malarial complications, seemed to be far less fatal than typhoid fever alone, as if the two infections were antagonistic.

The introduction of the term "typho-malarial" had many other results than those which Dr. Woodward intended. Dr. Smart said: "Instead of conducing to discrimination and simplification in the study of the camp fevers, its use tended to admixture and confusion, injuring the totality of the statistics of all the classes." "Moreover, the term was carried by our medical men into civil practice at the close of the war, where it has perpetuated the uncertainties attaching to the cases that have been classed under it."

In a paper contributed by me to the Association of American Physicians in 1888, on "The Geographical Distribution of Typhoid Fever in the United States," an epitome of medical opinion as to the nature and symptoms of the various forms of continued fever was given. The paper was based on replies to a circular letter asking for a definition of opinion on these points. The answers came from all parts of the country especially from the south and south west, where malarial diseases are more prevalent. It was clearly shown in these replies that there was no agreement as to the meaning of the term "typho-malarial," and that there was the greatest contrariety of opinion as to the groups of symptoms which go to make up the disease. Typho-malarial fever was said to be:

a. A continued malarial fever with typhoid symptoms, not influenced by specific (quinine) treatment.

b. An enteric fever with intermittent or remittent phenomena in the beginning or the end of its course.

c. A continued fever, with gastro-hepatic disturbance.

d. A fever of a certain gravity, prolonged, without the specific symptoms of true enteric fever, and not influenced by quinine.

e. A fever of a negative and mild character, without the characteristic symptoms of malarial or of typhoid fever.

Since 1888, the tendency to the disuse of the term has been on the increase. In no recent text book is such a disease de-

scribed and all condemn its use. As long as the term typho-malarial remains in the catalogue of diseases in our Health Reports so long will we have the thoroughly unreliable statistical returns. In the Census of 1890, the word typho-malarial does not appear at all ; all such returns were classed under typhoid fever.

Typhoid Fever the prevailing fever in Washington.

Until the discovery of Laveran there were no means of being positively certain whether typhoid fever is ever complicated with malarial infection. Carefully conducted blood examinations during a number of years since then have shown that malarial organisms are not found in the blood of cases of typhoid fever, even in malarial regions. In many hundred such examinations in the Johns Hopkins Hospital there were no parasites in a single instance. Dr. Thayer says "with our modern methods of diagnosis, and the recent advances in our knowledge of the intimate nature of typhoid and malarial fevers, we now know that no such condition exists."

It seems strange, with all the reiterated testimony on this point, that the habit persists of calling atypical cases of typhoid fever malarial or typho-malarial fever. The question of correct statistics is not the most important one here, it is more often a question of life and death, for so long as the delusion exists that a mild form of continued fever is not typhoid because its symtoms are not severe, and that it is malarial or a hybrid form, so long will we have delay in beginning appropriate treatment, and in many cases, fatal results. It is time that some organized effort should be made to secure uniformity of knowledge which will give us statistics that can be believed. At present the figures in our Health Reports have no value whatever. And although books, lecturers and teachers repeat the lesson that typhoid fever is *the* epidemic fever of our cities, that it is often lacking in the pathognomonic symptoms, the fever curve alone in some cases indicating its nature, yet there is a persistent adherence to the idea that continued fever, without combined characteristic symptoms, cannot be enteric fever. It is true that very rarely a mixed infection has been found, *but it is not true that the prevailing continued fever of Washington is anything else but a typhoid fever, atypical often, running a mild course, in many instances without rose spots, tympanites, diarrhœa or delirium, yet none the less true typhoid fever.* In the interest of the welfare of the community and of vital statistics this idea must be made to guide the physician in his practice. With the double test of Widal's reaction and the examination of the blood for the malarial parasite, we have the accurate means of determining the nature of the fever; but in no sense can reliance be absolutely placed upon these results. The knowledge that typhoid fever is the prevailing fever in our locality, that a diagnosis can be easily made in almost every instance by a knowledge of the symptomatology of the disease as it presents itself here, enables us to make a correct diagnosis in all but exceptional cases. The fault is not in the insufficiency of data, but in failing to appreciate the full value of those we have.

The rule also should be invariable to submit all cases of doubtful nature to an immediate treatment appropriate to the prevailing type of continued fever—typhoid fever. No harm in any case can result from such a course. If the opposite plan is followed of treating all such cases as if they were not typhoid until the aggravation of symptoms, soon to follow such a course, forces the physician to a correct diagnosis, the good effects of early treatment do not come, and mild cases are converted into severe and even dangerous ones.

THE PRESENT STATUS OF HYSTERECTOMY AFTER THE MENOPAUSE.

By Joseph Taber Johnson, M. D., Washington, D. C.

The present status of hysterectomy after the menopause is just about the same as the status of hysterectomy before the menopause.

Since accumulated experience has shown that the change of life has very little if any influence in arresting the growth of uterine fibromata in a large number of cases, we cannot count with any degree of certainty upon its favorable influence in any given case. For this reason we cannot now truthfully say to a patient seeking our advice on account of a troublesome fibroid, that, as she is nearing the average age for the cessation of her menstrual periods, her tumor will soon cease to annoy her, and will disappear altogether when the change of life is fully established.

Indeed, many examples of their rapid increased growth have occurred in my own limited experience when the patient had passed the thirty years of menstrual life allotted to the average normal woman.

Uterine fibromata prevent the occurrence of the menopause at the usual age of 45–47, and keep up the monthly periods as well as prove a fruitful cause of intermediate hemorrhages, at a time in the woman's life when she is by nature least able to stand such losses of blood.

Not only does menstruation continue in fibroid cases until the woman is between 50 and 55 years of age, on account of the irritation and congestion caused by its unnatural and offensive presence, but the tumor too frequently takes on an increased growth, becoming larger and more troublesome than before the menopause occurred.

It is quite possible in these cases that the popular idea that the menstrual blood, instead of escaping as it formerly did, now goes to feed the tumor, has some foundation in fact. One of the strongest indications for hysterectomy after the menopause is the tendency of the tumor to undergo some form of degeneration which, of itself, may prove fatal to the long suffering patient.

The writer has operated on two women with large fibroids, who were both over 60 years of age when the hysterectomy was done, on account of the calcareous degeneration of the tumor. After removal they could not be cut open with a knife or chisel they were so hard, and were only finally opened up with a saw.

Sarcomatous, carcinomatous and cystic degenerations occur and they also break down by the formation of internal abscesses.

The writer recently presented a 21-pound fibroid tumor to the Medical Society of the District of Columbia, which he had removed from a lady 57 years of age, which contained several pints of bloody pus. The Microscopical Committee of the Society reported that the specimen had undergone a sarcomatous degeneration. While the patient made a good recovery, there can be no doubt if hysterectomy had been delayed much longer, she would certainly have lost her life. It is no uncommon thing in reading the accounts of hysterectomies in the medical journals, to notice that the age of the patient was stated to be over 50. Indeed, Dr. Baer, of Philadelphia, the distinguished originator of "Baer's Operation," some time ago remarked "a large proportion of his hysterectomies were upon women who had passed the menopause." Several papers have recently been published upon this subject,

notably one by a member of the District of Columbia Medical Society, and another by Dr. Kelly, of Baltimore.

The age of the patient is no bar to hysterectomy. If a woman has a fibroid tumor threatening her life, or seriously menacing her health by hemorrhage, pressure, degeneration, obstruction of the bowels, peritoneal dropsy or what not, it should come out no matter whether she is 30 or 60 years of age. Hysterectomy should be done in any and all cases for actual or prospective symptoms without reference to age or whether the menopause has or has not occurred. The mere presence of a uterine fibroid which produces no symptoms is not a sufficient indication at any age for so radical an operation as hysterectomy, and, per contra, dangerous and threatening symptoms on account of malignant disease or a fibroid tumor of the uterus, should be met by the complete removal of the growth, even if the entire uterus were involved in the ablation, notwithstanding the fact that the menopause has occurred.

The mortality of this operation, when uncomplicated by malignancy, in good hands and in favorable environments, should not be more than 5 per cent.

The fatal cases are mostly in that class where delay has resulted in the formation of dangerous adhesions, exhausting complications and death-producing degenerations.

While a certain number of fibroid tumors are favorably affected by the menopause, those which remain unaffected by the change of life are more liable to take on an increased growth, or, as stated above, to undergo one of the forms of degeneration already referred to.

The present status of hysterectomy after the menopause is, that it should be resorted to whenever the usually accepted symptoms present themselves, which gynecologists, the world over, acknowledge to be of sufficient gravity to require that operation in any other period of life. These indications being present, the operation is less dangerous than the continuance of the symptoms. Ovariotomy is a very successful operation in old women; there seems to be no reason why hysterectomy should not be equally successful.

THE DIAGNOSIS OF RABIES.

By C. F. Dawson, M. D.,
Washington, D. C.

In the *Medical Record* for February 19, 1898, Dr. N. G. Keirle, Chief of the Pasteur Laboratory, College of Physicians and Surgeons, Baltimore, published an important statistical paper upon rabies in man. He based his diagnoses upon certain uniform symptoms which occurred in rabbits within a definite period after the subdural inoculation of an aqueous extract of the brain substance of animals suspected of having had rabies.

It is well known that the rabies virus, as it first reaches the investigator, (the so-called virus from the streets,) requires from two to three weeks—and often a longer period—to make its presence manifest in experimental rabbits. The *fixed* virus, or the virus obtained by a passage of the *street* virus through a series of experimental animals, will produce rabies in rabbits in a much shorter time.

As the *street* virus is the kind with which we have to deal in making diagnoses by means of rabbit inoculation, the long incubation period renders the method of doubtful utility in some cases. In one case in the writer's experience, the onset of the symptoms of rabies in the experimental rabbits was coincident with those in the person bitten, rendering the method, in so far as treatment was concerned, absolutely worthless in that case. So it would seem that, in order to

prevent the development of this terrible disease, either all persons who are bitten by dogs or other animals supposed to be rabid must be given the Pasteur treatment, or a quicker method of diagnosis by means of animal inoculation must be discovered.

In the *Medical Record*, March 12, 1898, Dr. Follen Cabot proposes the substitution of guinea pigs for rabbits in testing suspected cases in animals that have bitten persons. He states that guinea pigs, on account of their greater susceptibility to the rabies virus, and their lesser susceptibility to sepsis, are to be preferred to rabbits in making inoculations for rabies diagnosis. He says: "The first case I shall refer to, and which will be given in detail later, was that of a man who died of what was supposed by the clinical history to be rabies. Part of the brain removed at the autopsy was sent to the laboratory, and from a portion of this material, two guinea pigs and two rabbits were inoculated subdurally. On the 5th day after inoculation, furious rabies developed in one of the guinea pigs, and death followed on the 7th day. The other guinea pig developed the disease one day later, that is, on the 6th day, and died on the 8th day. The rabbits showed no evidence of the disease until the 16th day, when they developed the paralytic form. In case a patient were to be treated after being bitten by a person or animal suspected of having rabies, this difference between the incubation period of guinea pigs and rabbits would be of the greatest value. Treatment very seldom begins before the 3rd day after the bite, and frequently for various reasons not until the 5th day. Therefore, it seems to me best immediately to perform autopsy on the suspected animal and inoculate guinea pigs subdurally. If on the 6th or 7th day the animals do not show symptoms of rabies, treatment will be unnecessary, or, if begun, should be discontinued before the virulent cords are used for the injection."

In a second case reported by Dr. Cabot, rabbits were inoculated by two different sets of investigators simultaneously with guinea pigs. In this instance, all the rabbits died of septic infection soon after the inoculation, while the guinea pigs are still under observation.

In many cases the material to be investigated reaches the laboratory in a putrid condition, or the animal has been shot through the brain, the bullet carrying infective bacteria, collected from the skin or hair during its passage, into the brain tissue. In most cases, however, sufficient of the uninfected brain or spinal cord may be obtained.

It is only in these cases where the material is putrid that a fatal septic infection may be expected in rabbits. As stated above, the length of the period of incubation in rabbits is the great drawback to their employment, and Dr. Cabot's suggestion as to the use of guinea pigs in their stead should be adopted in all laboratories where these test inoculations are made. Attention is also called to the fact that, according to Dr. Cabot, guinea pigs develop the *furious* form of the disease, while in rabbits we observe the *paralytic* form. Another important reason why rabbits are inferior to guinea pigs is the occasional onset in the former of a seemingly spontaneous semi-paralytic condition which might be erroneously ascribed to rabies. Rabbits seem peculiarly liable to injuries of the back, and this condition of paralysis is probably brought about by injuries from rough handling, or from sudden fright, which cause violent action of the highly-developed back and leg muscles. By this means the vertebræ are probably dislocated and either press upon the cord or rupture the meningeal blood vessels. In several cases coming under the observation of the writer this was the only way in which the paralysis and post-mortem discovery of blood extravasations into lumbar muscles could be explained.

THE NATIONAL MEDICAL REVIEW,

EDITED BY

GEORGE W. JOHNSTON, M. D., THOMAS E. MCARDLE, M. D.,

WITH THE CO-OPERATION OF

Charles E. Simon, M. D., Andrew Stewart, Ph. D., E. A. de Schweinitz, Ph.D., M. D., Edwin B. Behrend, M. D.,

AND

THE MILITARY SURGEON,

A SUPPLEMENT,

UNDER THE CHARGE OF

Colonel WILLIAM H. FORWOOD, Assistant Surgeon-General U. S. Army.

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Notices and Reviews.

A MANUAL OF OBSTETRICS. By A. F. A. King, M. D. Seventh edition. Lea Brothers & Co., Philadelphia and New York, 1898. pp. 560.

Sixteen years ago this little book made its bow to the profession, and whatever misgivings the author may have felt have long since been removed. Successive editions have been exhausted, and the publishers now place the seventh in our hands. It does not claim to be a systematic treatise, but rather "an elementary alphabet of obstetrics." In truth, it is much more than this; but while open to the usual objections against manuals as a class, it is so complete and far-reaching in its scope that it occupies a middle ground.

The explanation of the popularity of the book is clear. It is not, even in part, as the author modestly suggests, due to the influential name of the publishing firm. Dr. King possesses in a rare degree the gift of perspicuity. What he has to say is said briefly and comprehensively. The obscurity that hangs like a veil around many subjects which students dread to encounter is brushed away, and they stand revealed in clear light. The successive editions of the book are not mere repetitions, but show painstaking revision. But few typographical errors are noticed. On page 187, third line, uppuration is intended for separation. A possible exception to the lucid style of the author is found on page 41. Describing the fœtal head, he uses the expression "the short transverse diameter of the child's head, viz: from one parietal protuberance to the other, is less than the transverse diameter of the trunk." He does not mean that the bi-parietal is the short transverse diameter of the head, as one might infer, but that it is short compared to the transverse diameter of the trunk.

In a work of which so much good can be said, and which has so merited the confidence of the profession, it seems one is scarcely warranted in attempting to pick flaws. With the exception of some anatomical details, the criticisms in question are matters of opinion, and as the world is made up of many men of many minds, dissenting views are natural sequences. In Chapter I, on Pelvimetry, we think it unnecessary to give the oblique diameter of the pelvic outlet, inasmuch as the posterior termini are the great sacro-sciatic ligaments. These yielding structures offer no resistance to the fœtus, and the burden of memorizing them does not repay the student by any practical application of the knowl-

edge gained. The same reason cannot be given regarding the omission of the external oblique diameters of the false pelvis. These are of decided practical value, and the information is not even supplied later in the chapter on Pelvic Deformities.

Chapter III. is devoted to the Anatomy of the External Organs of Generation. The labia majora are described as resembling "the lips of the mouth; they are covered internally with a layer of mucous membrane, containing mucous follicles," etc., and the labia minora "are thick, double folds of mucous membrane." Most anatomists, on the contrary, assert that this is not mucous membrane, and that no mucous follicles, but sebaceous glands are found. True mucous membrane and mucous glands are not met with until the vestibule is reached. On page 55, the peritoneum covering the anterior surface of the uterus is said to be reflected to the bladder at a point midway between the internal and external os. This is clearly erroneous. The supravaginal portion of the cervix is in relation anteriorly with the bladder, and the peritoneum does not extend below the level of the internal os.

Figures 10 and 13 only serve to misrepresent the natural relations of the fallopian tubes and ovaries. The author, in an apologetic foot note, says of the latter (Fig. 13), "The whole ovary is represented pushed up out of place. If pushed down again to its normal position, it would be *below* the fallopian tube."

The description of the venous circulation of the uterus and its appendages could well stand retouching. The author still adheres to the old and, we thought, exploded theory about the fimbriæ of the tube grasping the ovary when the ovule is about to be discharged from the ruptured Graafian follicle. The ovular theory of menstruation is also retained, and while some of the arguments against it are met, the most convincing evidence to the contrary is omitted.

The great danger attending the excessive vomiting of pregnancy is not emphasized sufficiently to warn the inexperienced from placing too much confidence in nature's resources. Enumerating the symptoms, the author says: "Still later, in the worst cases, vomiting stops (from exhaustion of reflex power of the spinal cord), and nervous symptoms appear, viz: delirium, stupor, coma, and rarely, *very* rarely, death." We venture to assert that when a case reaches this point death takes place *invariably*. The desperate character of these cases is not any more accentuated by the subsequent statement that "cases apparently hopeless sometimes 'turn a corner,' and end in recovery when it is least expected." Unfortunately, it is this waiting policy that gives disastrous results. While waiting to 'turn a corner,' valuable time is lost and radical measures are deferred until they are of no avail. On this point the author says: "Should all means of relief fail, and constitutional symptoms of a grave character arise, the last resort may be adopted, viz: the induction of abortion or premature labor; but the cases requiring it are *very* rare, and it is not to be employed without a consultation of two or more physicians." According to this advice it would be too late to adopt such measures and we would recommend the advantages of consultation early in the case. The treatment given, while quite full, fails to impress the importance of putting the patient to bed. Indeed, it is not mentioned at all. Many of these cases can be controlled in the beginning if this be insisted upon as the first step in the line of treatment.

Under Pathology of Pregnancy, Dr. King discusses the diseases of the kidneys, and while enumerating the different theories advanced to explain the occurrence of albuminuria, he omits reference to the modern view, which considers ptomaine poisoning the cause of diminished renal excretion. The total quantity of urea excreted daily by the pregnant woman should not, according to his statement, be less than 400 or 500 grains. On the contrary, in a large number of urinalyses made during pregnancy, the fact is brought out that the amount of urea excreted by the pregnant woman is less than normal. Very few examinations will give such a large excretion as Dr. King mentions, and the average is about 250 or 300 grains.

Chapter X., on Abortion and Prema-

ture Labor, is excellent. It does not contain, however, a differential diagnosis between threatened abortion and ectopic pregnancy. The clinical history of the two is very similar, and the importance of making a differential diagnosis is shown by the errors so often committed of mistaking one for the other. In both we have the symptoms of existence of pregnancy ; in both, also, we have uterine pain, with the discharge of blood and perhaps clots or shreds. The prognosis and treatment of the two conditions are so different that an early diagnosis is highly desirable and fully warrants careful consideration. Objection may be made to the statement that the tubal variety of ectopic gestation is the most fatal of any, and that interstitial pregnancy is less so. Tubal pregnancy may, often does, rupture into the broad ligament and recovery occur ; the rupture of the interstitial variety, although delayed, is invariably fatal. The only possible chance of recovery in the latter form is the rare termination by the escape of the ovum into the uterine cavity. In ruptured tubal pregnancy no distinction is made by the author in diagnosis and treatment between extra and intra-peritoneal hemorrhage.

Symphyseotomy, Dr. King says, was never performed in the United States until 1892. He overlooks the operations of Dr. Joel O. Williams, of Texas. His first operation in 1880, was the sixth in the world and the first performed outside of Naples. Again in 1884, and in 1889, he performed the operation and made the record of the first symphyseotomies in the United States.

In concluding we should say that the book has great merit. The chapters on Abortion and Premature Labor, Placenta Prævia and Post Partum Hemorrhage would do credit to a more pretentious treatise. Puerperal Septicæmia receives the full consideration its importance demands and is thoroughly up to date. The recommendation to use five per cent. solutions of carbolic acid for vaginal douches is evidently an oversight ; also the administration of fifteen grain doses of antipyrine to reduce temperature. The description of surgical operations, notably of symphyseotomy and Cæsarean section, is clear and full.

The present edition of the book cannot but continue to receive the favor accorded to the previous editions and the profession of Washington feel a local pride in its well merited success.

A COMPENDIUM OF INSANITY. By John B. Chapin, M. D., LL. D., Physician-in-Chief, Pennsylvania Hospital for the Insane. W. B. Saunders, Phila., 1898. $1.25 net.

Dr. Chapin, one of the foremost alienists of the United States, has devoted himself to the care of the insane for more than 40 years. For some years he was associated with Dr. Cook in a private hospital at Canandaigua, and afterwards was for years Superintendent of the State Hospital at Willard, N. Y. It was during this period (1869) that, owing largely to his efforts and influence, the chronic insane of the State of New York, cared for at home, in the County Alms Houses and "boarded out" in private families, were admitted to hospitals for the insane and brought under direct control of the State authorities. For some years past he has been Physician-in-Chief of the Pennsylvania Hospital for the Insane, Philadelphia. His long experience and study in care of the insane, makes him an authority, and he tells, in an interesting way, what is familiar to him and to others, who have devoted their lives to these afflicted ones.

The book is an admirable one, and supplies an urgent need of the student and the general practitioner. It is concise, its nomenclature and classification are simple, the description of the various forms of mental diseases lucid, and the advice, with which it is replete, valuable. It brings to the busy practitioner, who sees few cases of insanity, who knows little or nothing of the subject and finds no time for wading through voluminous works on mental disease, in a form to which he can refer in a moment, a book of reference, that he will find most useful. The first thing that impresses one, in reading the book, is the absence of long names and confusing phraseology, too often found in similar works. The descriptions of diseases are so free from attempts to appall his readers with his familiarity with the dictionaries of dead languages and with quotations from the French, that young medical students, and

the laity as well, not familiar with any language except the English, may read and understand.

He accepts the classification and nomenclature adopted by the Congress of Mental Medicine, at Paris, in 1889, and recognizes 11 forms of mental disease: 1, mania; 2, melancholia; 3, periodic insanity; 4, progressive systematic insanity; 5, dementia; 6, organic and senile dementia; 7, general paralysis; 8, insane neurosis (hysteria, epilepsy, hypochondriasis, etc.); 9, toxic insanity; 10, moral and impulsive insanity; 11, idiocy. A chapter is devoted to each form, giving, so far as possible, the etiology, symptomatology, diagnosis, prognosis and treatment. The suggestions for treatment in the chapters on Mania and Melancholia are excellent, and will be useful to practitioners treating these forms of mental disease in private practice. In too many cases are patients, suffering from melancholia due to overwork or some great moral shock, with mental and physical forces at low tide, dragged about from place to place, forced by their friends to travel, to seek changes and to indulge in social diversions, with the hope that, by these means, they may be made to forget themselves and regain a normal degree of cheerfulness and an interest in their surroundings. As Dr. Chapin says, these changes are forced upon them at the risk of the expenditure of their remaining physical strength, and, frequently, of the money savings of years, but often are mistaken experiments, disastrous in their results. Mental and physical rest, with freedom from anxiety and annoyances, is what is required, rather than enforced jollity.

In the chapter on Morbid Anatomy is given, briefly, considerable of the pathology of mental diseases, some of which has comparatively recently been accepted.

The chapter devoted to General Paralysis of the Insane (Paresis) is short, but sufficiently complete, and will furnish students with a good general idea of this form of mental disease.

The last chapter of the book is devoted to "Medical Certificates" and "Feigned Insanity." Both subjects are carefully handled, and the chapter is full of good advice. On the whole, we can say nothing but good of Dr. Chapin's book, and it seems that in a work as compact as the one he has just published, he has made the most of the space occupied, has chosen well the material, and presented it in a manner that reflects the character of the man.

ATLAS OF METHODS OF CLINICAL INVESTIGATION WITH AN EPITOME OF CLINICAL DIAGNOSIS AND OF SPECIAL PATHOLOGY AND TREATMENT OF INTERNAL DISEASES. By Christfried Jakob, M. D. Authorized translation from the German. Edited by Augustus A. Eshner, M. D. W. B. Saunders, Philadelphia, 1898. Price, $3,00 net.

This book contains a systematic account of the many well-known methods employed in clinical diagnosis, with a brief description of the special pathology and treatment of a variety of internal diseases. It differs from many of the modern works upon kindred subjects by reason of the free use made of illustration, the author, as he has shown in other publications, being convinced of the great value of this method of teaching. Certainly the diagrams picturing the normal projection of the viscera and percutory topography, those representing diseases of the heart, the liver, the lungs, etc., are beautiful in execution and most instructive. Perhaps a few of the illustrations are too diagramatic—for example, certain of those representing the blood—but this is a direction in which it is very wise to err.

Like many of the newer books dealing with clinical diagnosis, that before us includes not only a description of the methods employed at the bedside, but the almost equally important procedures of the laboratory. The various chemical, microscopical and bacteriological methods of clinical research are described with an emphasis, which shows very clearly the position that they have attained in modern medicine.

The author states that the average amount of urine passed by the healthy individual in twenty-four hours is 1500 c. c. Our ideas as to the normal quantity of the urinary excretion are based largely upon Continental observations, although the habits of the European, as regards eating and drinking, if in no other respects, are wholly unlike our own; and it may be doubted if, in America, the average daily excretion, even in men, reaches the neighborhood of 1500 c. c.

It is to be regretted that in the further discussion of the urine, physiological albuminuria had not been left out of consideration altogether, or else the whole question of the significance and detection of the proteids been described at greater length. The fact of the necessity of preliminary filtration before the performance of any albumin test is not mentioned, although, unless the urine be clear, albumin, even in considerable amounts, may fail of recognition, especially with a test so full of error and so unsatisfactory as that with heat and nitric acid.

In many respects this otherwise very valuable book hardly seems to have been brought up to date. We look in vain for a description of the dried-blood method of doing Widal's test, nor can we discover any mention of Töpfer's reagent for the detection of free HCl in the gastric contents. Further, we cannot see for what reason the author advises that the puncture, for withdrawing blood, be made in the finger.

The chief defects in the work before us are mainly due to the brevity and dogmatism inevitable in all handbooks. Its merits lie in the systematic methods of observation that it teaches, and in the number, variety and accuracy of its plates. N. N. P.

AN AMERICAN TEXT-BOOK OF GENITO-URINARY DISEASES, SYPHILIS, AND DISEASES OF THE SKIN. Edited by L. Bolton Bangs, M. D., and W. A. Hardaway, M. D. Philadelphia, W. B. Saunders, 1898. Cloth, $7.00; sheep or half morocco, $8.00. For sale by subscription.

Forty-seven contributors have united in giving to the world an original yet homogeneous work, fully representative of the several departments of medical science with which it is concerned. It will be impossible, in the limited space at our disposal, to do anything like adequate justice to the merits of the volume before us.

In the first chapter, Urine Analysis, Dr. Paul Thorndike considers the subject of urine in surgical diseases of the urinary tract. In Diseases of the Penis, Dr. B. Farquhar Curtis treats of malformations and deformities, injuries, gangrene, inflammatory conditions, tuberculosis, herpes progenitalis, varicose veins, neuralgia, priapism, and tumors. In Diseases of the Male Urethra, Dr. G. Frank Lydston has an elaborate defense of the water-closet theory of the origin of gonorrhœa, and says we are entirely too prone to question the veracity of the patient. In Diseases of the Scrotum, Dr. Eugene Fuller omits all cutaneous affections properly belonging to the dermatologist, while at the same time he makes mention of numerous conditions not generally classified as diseases of the scrotum, which, however, present peculiar and characteristic features in relation to that organ. In Diseases of the Prostate, Dr. J. William White says castration may be said to have passed the experimental stage, and to have established for itself a place among legitimate operative procedures. Dr. Edward Martin and Dr. A. E. Taylor have a specially interesting article on Tumors of the Bladder. Dr. Francis S. Watson, in Vesical Calculus, declares that it is undoubtedly true that almost all stones having uric acid nuclei originate in the kidney. Dr. Christian Fenger, in Diseases of the Ureter, has given us a marked sample of the efficient work he always does. Dr. P. R. Bolton, in Surgical Diseases of the Kidney, is of the opinion that, for the sake of accuracy, the term "floating kidney" should be confined to those exceedingly rare states in which the kidney is actually surrounded by peritoneum, and suspended in the abdominal cavity by a distinct mesonephron. Dr. James Pedersen closes an excellent series of articles on Functional Disorders with the following statement: "The highest authorities concur in the opinion that sexual intercourse in the unmarried is not a physical necessity, and that absolute continence is perfectly compatible with perfect health." One hundred and forty-two pages are given to the consideration of syphilis by seven eminent authorities. A chapter on Chancroids completes this part of the work.

The remaining four hundred and fifty pages are devoted to Diseases of the Skin. We fail to understand why it would not have been better to publish this part as a separate volume. Every article in it is the product of the experience of some of the best specialists in this country. Skin diseases can never be learned from books alone, but the one before us will prove invaluable as a work of reference. M.

The Progress of Medicine.

GENERAL MEDICINE AND SURGERY.

Renal Hæmorrhage from Healthy Kidneys.

There are a number of facts which show, both from clinical observation and pathology, that an organ which bleeds may be perfectly healthy (menstrual bleeding, hæmorrhage in neurasthenic individuals, etc). Klemperer reports two personal observations in hysterical women, who had hæmoptysis and hæmatemesis from healthy organs, in which, post mortem, nothing was found. The statistics of the number of reported cases of hæmorrhage from the kidneys in which surgeons have removed normal kidneys, show that, notwithstanding normal anatomical conditions, profuse bleeding may occur as a result of nervous influences. Klemperer draws the following conclusions: 1. Hæmorrhage from the kidneys may result from excessive bodily exertion; 2. In the diagnosis of chronic hæmorrhage, the hæmaturia of bleeders, and angio-neurotic hæmorrhage must be thought of, in addition to acute nephritis, renal calculi, tuberculosis, pyelonephritis and tumor; 3. Hæmaturia may be diagnosed from family history; 4. Angio-neurotic hæmorrhage may be diagnosed if the bloody urine is a simple mixture of blood and urine, without the presence of any other pathological elements, and if the kidneys are not found increased in size through palpation. The renal origin of hæmorrhage is made out, through the sensitiveness of one kidney, bloodcasts or cystoscopy. Symptoms of general neurasthenia aid in the diagnosis, but are not an essential necessity; 5. Angio-neurotic hæmorrhage has been observed, associated with paroxysms of pain simulating renal colic. But they are of less intensity, do not last so long, and are amenable to suggestive influences; 6. The diagnosis of angio-neurotic hæmorrhage is only to be made after long observation; 7. The treatment consists of complete rest in bed, milk diet, suggestion, local electrization and hydrotherapy; 8. Surgical interference should only be undertaken when internal medication fails and anæmia threatens life; 9. If on surgical interference the kidney is found intact, extirpation should not immediately follow—the psychic effect of the exploratory operation should be awaited. Klemperer (G.) Ueber Nieren Blutungen bei gesunden Nieren. Fortschr. d. Med., Berl., 1898, xvi, 103.

Acromegaly.

In typical cases of acromegaly (thirty) with autopsy recorded up to the present, tumor of the hypophysis was never lacking. The tumor consists, ordinarily, either in a simple hypertrophy of the gland or in a pure adenoma of the pituitary body, in which the principal normal elements of the gland are preserved. In all the skulls of giants observed (twelve), there was increase in size and excavation of the sella turcica, from which it may be concluded that there had been a tumor of the hypophysis in these cases. With the pathological increase of the bones, whether due to giantism or acromegaly, there is always associated a tumor of the pituitary body. The fact that atrophy of the gland is never found in acromegaly and that the phenomena of acromegaly are never found in atypical tumors of the hypophysis, shows that disease is not connected with loss of function of that organ. The constant presence of a tumor of the pituitary gland in acromegaly and giantism, and the nature of the tumor, simple hypertrophy or typical total adenoma with the preservation of the distinctive elements of the gland, speak in favor of the hypothesis that acromegaly may be associated with a heightened function of that gland. Tamburini. Sur l'acromégalie. Presse méd. belge, Brux., 1897, 325.

New Views of the Origin of the Symptoms in Chlorosis.

Grawitz considers the various theories that have been held with reference to the nature of chlorosis, and announces some recent researches of his own in this dis-

ease. He believes that more refined methods of blood analysis allow of new views of the pathology of chlorosis to be held. He finds that the serum in chlorosis is not more hydræmic than normal, but that the volume of red cells was greatly diminished. This he accounts for through an increase in the amount of plasma, which, however, contains the normal constituents. He lays great stress on the relation between mass of corpuscles to total amount of blood. He then discusses the universally accepted belief that chlorosis is a disease of the blood or the blood-making organs, in the light of these newer researches. There is no good reason for believing that the disease is primary in the blood or the hæmatopoietic organs. In contradistinction to pernicious anæmia, in which the degenerative signs in the red blood cells are marked, the cells in chlorosis are little changed in their number or form. The essential characteristic of chlorosis is to be found in the serous imbibition and swelling of the cells. There is nothing abnormal in the macro- or microscopic appearances of the blood-making tissues. The richness of the blood in plasma is, in Grawitz's opinion, to be sought in anomalies of the lymph formation rather than in the blood formation. He calls attention to the fact that all the organs of a chlorotic individual contain a higher per centage of fluid elements than normal. These observations seem to show that the regulation of the exchange of fluid between the blood and tissues is disturbed; this leads to increase of fluid in the blood and secondarily to stasis of tissue lymph. The disturbances in the circulation of the blood and lymph show that in chlorosis there is a disturbance of function of the vasomotor nerves. The increase of fluidity of the tissues is also present in the bone marrow and this causes a disturbance in the development of the cells; they take up water and are unable to take the normal amount of hæmoglobin. The poverty in hæmoglobin in chlorosis is therefore secondary. He believes that chlorosis is not a primary disease of the blood, but that the peculiar blood mixture of chlorosis is a symptom of a universal neurosis, and that it is produced through a diseased function of the vasomotor nerve supply which leads to polyplasmia, stasis of lymph and faulty formation of red blood cells. The conclusion, then, to which he arrives is that a universal functional derangement of the nervous system is that which differentiates chlorosis, in a specific manner, from other anæmias. Grawitz (E.) Neuere Ansichten über die Entstehung des Symptomen Complexes der "Chlorose." Fortschr. d. Med., Berl., 1898, xvi, 81.

The Medical Treatment of Diseases of the Upper Urinary Tract.

The author calls attention to the progress that will probably be made in the local treatment of diseases of the upper urinary passages through the catheterization of the ureters, but regards the instrumentarium as too complicated to be employed generally. He then takes up the question of mineral waters. These are, he says, of undoubted value and act largely through their diuretic properties. The salts are, however, present in such small quantities that a direct action can hardly be ascribed to them. The same difficulty is found in the use of astringents; it is hardly possible to administer them in such manner as to exert any decided action on the mucous membrane of the genito-urinary tract. In addition to the above mentioned agents, we possess a number of remedies which undeniably exert a beneficial local influence on inflammatory conditions of the mucous membrane. The action of these remedies is mainly anti-parasitic or germicidal. From a therapeutic standpoint, the infectious diseases of the upper urinary passages are two: 1. Infection of the urinary passages themselves; 2. Infection of the urine. In order to affect the imflammatory conditions of the urinary passages, he employs the balsams, to which an almost specific action has been ascribed. He prefers the use of sandal wood oil, which he gives in one gm. doses 3 times a day. In the second group of cases it is the object of treatment to disinfect the urine. Salol was, until a short time ago, the ideal antiseptic employed for this purpose. But it has been supplanted by the introduction of urotropin by Nicolaier, from the use of which the author has

seen more favorable results than from any other remedy. The urinary decomposition is usually controlled within two days after the exhibition of the drug; the alkalinity, pus and other inflammatory products disappear from the urine. Especially is the remedy to be exhibited in chronic cases of pyelitis and cystitis, in which its action is almost miraculous. These results are confirmed by the late researches of Nicolaier, Casper and Cohn, etc. In the treatment of uric acid calculi, Martin recommends diuresis and the rendering of the urine alkaline. Nothing is to be expected of the uric acid solvents; they are illusory. Mendelsohn (M.) Ueber medicamentöse Behandlung der Krankheiten der oberen Harnwege. Berlin. klin. Wchnschr., 1898, xxxv, 48.

Association of Arteriosclerosis and Rheumatic Gout with other Lithæmic Manifestations.

The purpose of this paper is to call attention to the ætiologic role which the uric acid diathesis bears to arteriosclerosis, chronic kidney disease and rheumatic gout. A number of personal observations are cited by the author, Dr. Rachford, confirmatory of his opinion of this view. He conceives the lithic acid diathesis as a resultant of the retention, not only of uric acid, but also of the alloxuric bodies including the xanthins. The xanthins, and especially paraxanthin, circulating in the blood bring about through their irritative effects the nervous symptoms of lithæmia, migraine, gastric neurosis, and eventually lead to the production of arteriosclerosis. The author has been able to demonstrate an increased excretion of xanthin bodies after or during acute arthritic attacks occurring in lithæmic individuals. He has never found, however, in these cases an excess of the paraxanthin which is to be found in migranous urine. He, therefore, inclines to the belief that paraxanthin is an important factor in producing the nervous symptoms of lithæmia, and that the other xanthin bodies, together with uric acid have more to do with the production of the joint symptoms from which lithæmics suffer. Attention is called to a relationship existing between the administration of thyroid glands to individuals suffering from the uric acid diathesis, and the accompanying gout, arteriosclerosis, arthritis, etc. In two cases it was possible to bring on acute arthritic attacks with excessive secretion of alloxuric bodies through thyroid feeding. He asserts in connection with this fact: 1. Attacks of arthritic gout are associated with the excretion of an excess of alloxuric bodies in the urine; 2. Thyroid feeding will increase the excretion of these bodies, and will produce acute arthritis in a patient suffering from chronic rheumatic gout; 3. Patients suffering from arthritic gout not uncommonly have acute attacks precipitated by the menstrual period. The hyperactivity of the thyroid gland occurring at this period may act in the same manner as thyroid feeding in these cases. Rachford (B. K.) Phila., M. J., 1889, i. 689.

Lumbar Puncture in Encephalopathia Saturnina.

While the diagnostic value of lumbar puncture is no longer a matter for discussion, its therapeutic uses have been denied. The author recommends this procedure in cases of encephalopathia saturnina. He reports a case in which deep coma followed severe convulsions. Six c.c. of cerebro spinal fluid were removed. The comatose condition abated and the patient recovered consciousness. During observations extending over a number of weeks, the patient's mind remained clear. The fluid had a specific gravity of 1.008. Under the microscope, a few leucocytes and endothelial cells were found. The interesting observation was made that the fluid flowed from the spinal cord, at first clear and later cloudy. The author believes that the spinal cord was less influenced than the brain by the lead poisoning; for the clear portion evidently came from the sub-arachnoid space of the spinal cord; while the more cloudy cell-containing portion must have come from the brain. Seegelken (J.) Lumbal Punction als therapeutischer Eingriff bei Encephalopatha saturnina. Muench. med. Wchnschr., 1896, No. 47.

CLINICAL DIAGNOSIS.

UNDER THE CHARGE OF
CHARLES E. SIMON, M. D.,
AND
ANDREW STEWART, PH. D.

A Test for Free Hydrochloric Acid in Stomach Contents.

An alphanaphtol test for HCl in the contents of the stomach has been suggested by Winkler. Filter the gastric contents and gently heat a small quantity with a few drops of 5 per cent. alphanaphtol solution, together with a few granules of dextrose. In the presence of HCl a bluish violet color appears, which becomes rapidly black. The test is delicate in a dilution of 0.04 HCl in 1000. Neither lactic nor acetic acid gives a positive reaction. Winkler (F.), Der Nachweis freier Salzsäure im Mageninhalt mittels Alphanap hthol. Centralbl. f. inn. Med., 1897, xvi ii, 1009. A. S.

Analysis of the Stomach Contents for Purposes of Diagnosis.

Dr. Reed deprecates that the certain and reliable methods of diagnosticating diseases of the stomach based upon an analysis of the stomach contents, in conjunction with the so-called test meal, should be so universally neglected by physicians. He emphasizes that the exact nature, extent and tendency of abnormal functioning of the gastric glands may be detected at once by such means, insuring in most cases a prompt and certain cure; whereas, if diagnosis is arrived at too late, or remains obscure, a long, tedious treatment and a fatal issue but too frequently result. A diagnosis is very readily arrived at by analytical means in such disorders as: Deficient secretion of HCl and the gastric ferments; excessive secretion of the same; deficiency, or insufficiency, in motility (muscular power) of stomach; excess of same; inflammation of the gastric mucous membrane; presence and degree of infection of stom. by fermentation exciting bact.; atrophy of gastric glands; carcinoma, and ulcer. Reed (B). Phil. M. J., 1898, i, 253. A. S.

Morphium and Gastric Disturbance.

Dr. Kleine deducts the following from his experiments on dogs. Morphium retards in an extraordinary degree stomachic digestion, and the continued introduction of the drug into the system causes a diminution of HCl secretion. These phenomena are at first independent of each other, digestive disturbance, on account of the alkaloidal influence on the motor nerves, being the first to appear. Artificial digestion experiments did not show a retarding of peptonization in the presence of morphium. The natural consequence of weakening stomachic motor power is, that the ingesta begin to ferment, which gradually affects the mucous lining. This has an inevitable effect on the secretion of HCl. As the diseased condition of the stomach increases, the HCl secretion diminishes, and can at last even cease entirely. If, on the other hand, the drug be discontinued and the stomach be treated by irrigation, the HCl secretion appears again, with the returning health of the mucous surface. It is also not impossible that the chronic effect of the drug on the stomach nerves, themselves, plays a role in the above phenomena. It is certain, however, that administering morphium to produce an artificial acidity in the stomach is not to be recommended. It is, at first, futile, and if it should bring about the desired effect, both stomach and brain are sure to suffer. Kleine (F. K.) Deutsche med. Wchenschr., 1897, 21. A. S.

On the Presence of Mucus in the Fæces.

As the result of an exhaustive study regarding the occurrence of mucus in the fæces, Schmidt arrives at the following conclusions: The body which can be precipitated by acetic acid from aqueous or alkaline extracts of the fæces is not mucin, as claimed by Hoppe-Seyler, and hitherto maintained by many others.

From the amount and character of the mucus which may be found in the stools, it is impossible to establish a special form of enterities membranacea. Only the clinical picture, as originally described by Nothnagel under the name of colica mucosa, can be regarded as indicating a disease *sui generis*, as compared with other forms of enteritis membranosa, so called. The occurrence of particles of mucus visible only with the microscope—the hyaline mucous islands of Nothnagel, have not been firmly established. This same holds good for the mucous nature of Nothnagel's mucous granules. The matrix of the majority of membranous formations, passed by the anus, is mucus, viz.: mucin. The refractory behavior of these masses toward chemical reagents is owing to the constant presence of fairly large amounts of fat and soaps, with which these masses are always impregnated. Fibrin has thus far never been demonstrated with certainty in mucous evacuations. Nothnagel's "verschollte Zellen" are unchanged or previously degenerated cells—epithelial cells and leucocytes—the protoplasm of which has become impregnated with soaps. The occurrence of such formations is not limited to the contents of the intestinal canal. The number of leucocytes is not always so small as might be inferred from a mere examination of fresh specimens. For the diagnosis of ulcerative processes, a dearth of a mucous interstitial substance is more important than the presence of numerous leucocytes. Positive indications as to the local origin of bits of mucus, or of leucocytes enclosed in mucus, do not exist. The presence of cells, which with the exception of the nuclei have been more or less digested, might, perhaps, more so than any other factor, be taken as pointing toward the small intestine as the home of these cells. Unless peristalsis be very much increased throughout the entire intestine, particles of mucus coming from the small intestine probably never reach the anus undissolved. Schmidt (A.) Arch. f. Verdauungskrankheiten, 1898, iii, 439.

C. E. S.

Intestinal Lithiasis and Intestinal Gravel.

Dieulafoy affirms the occurrence of an intestinal lithiasis in man, analogous to the formation of biliary, renal and vesical concretions. Sand, gravel, and stone formation may be observed.

The material consists partly of fæcal matter and partly of inorganic matter, calcium and magnesium salts predominating. The condition is accompanied by entero-colitis membranacea, and is frequently associated with the uric acid diathesis. Exceptions, however, as in the case of cholelithiasis and nephrolithiasis are not uncommon. The disease may on the one hand give rise to but little discomfort, while on the other and more commonly, severe attacks of intestinal colic occur, which are followed by the elimination of sand, gravel or sandy concretions, with or without mucous masses. The attacks must be sharply distinguished from similar attacks referable to gall stones and appendicitis. Dieulafoy. Ref. in Arch. f. Verdauungskrankheiten, 1898, iii, 444.

C. E. S.

A Case of Multiple Enteroliths in Man.

Mörner reports a case of multiple enteroliths, which were removed from the rectum of a man, aged 23, who was always constipated. The individual stones weighed from seven to twelve grammes. In two, plum seeds were found as nuclei. Analytically, were found Mg, Ca, NH_4, Na, H_3PO_4, CO_2, fatty acids, neutral fat, cellulose and other organic substances, while H_2SO_4, HCl and biliary constituents were absent. Mörner, (C. T.) Zeitschr. f. physiol. Chem., xxii.

C. E. S.

A Quantitative Widal Serum Test--Dried Blood Method.

The authors recognize that, for ordinary routine diagnostic purposes, a quantitative Widal test is superfluous; for purely scientific research, on the other hand, particularly where the results are to be used for recording exceptional and doubtful cases, quantitative results are very desirable. A platinum wire loop of known dimensions is recommended for collecting the blood, which is allowed to dry and is then mixed with five loops (same loop) of water, used seriatim, the solution from each drop being sucked up by a capillary tube and the whole mixed. From this stock solution are prepared standard sub-solutions, using a straight

capillary tube fastened to a thermometer scale by a rubber band. By this plan the absolute quantity of blood taken is immaterial. The tube is easily cleansed. In testing, a small platinum loop of the blood solutions is mixed with as many loops of water and bouillon culture as may be needed to give the desired dilution. Johnston (W.) and Thomas (H. N.), Brit. M. J., Lond., 1898, i, 359.

A. S.

Clinical Determination of the Alkalinity of the Blood.

Quinan refers to the want of exactitude in the methods proposed for determining the alkalinity of the blood, and offers the following: Weigh 40 gm sodium hydrate into a litre flask, which is then filled to the mark with distilled water and standardized by titration with normal sulphuric acid. Ten c. c. of the normal alkali solution are run into a litre flask and distilled water added to mark; each c. c. therefore, contains 0.0004 NaOH. A solution of hydrochloric acid is then prepared, of such strength that 25 c. c. are exactly neutralized by 10 c.c. of the standard alkali solution. To the acid solution 0.5 per cent. of sodium chloride is added. Twenty-five c. c. of this HCl solution are measured into an Erlenmeyer flask, and one drop of methyl orange added. The lobe of the ear is punctured and the drop of blood allowed to exactly fill a capillary tube (2 cm. long and 2 mm. in diameter) which holds 0.3 gm. of water, when full. The blood is next washed with a stream of distilled water into the flask containing the HCl solution, and, after being mixed, the liquid is titrated with the standard NaOH solution, until the color has changed from magenta to light yellow. Since 10 c. c. of the NaOH solution are required to neutralize 25 c. c. of the HCl solution, the amount of the solution used, subtracted from 10, gives a figure representing the alkalinity of blood; or rather it will represent, in terms of sodium hydrate, the total constituents of the blood capable of neutralizing hydrochloric acid. Quinan (C.) Pacific Rec. M. & S., San Fran., 1898, xii, 303.

A. S.

Sugar in the Blood.

Drs. R. Kolisch and K. von Stejskal, in experimenting upon the blood of normal persons and diabetics with regard to the sugar contained therein, come to the following conclusions: 1. Normal human blood, analagous to that of dogs, contains only minimal quantities of preformed sugar, by which fact the old theory of the retention of sugar by the kidneys is exploded. 2. While the blood of diabetics, and that containing phloridzin, show no increase in sugar, an increase in jecorin has been demonstrated. 3. Glycosæmia is observed only as of alimentary origin. 4. Jecorin is not, as such, present in blood, but probably as a proteid compound, analogous to hæmoglobin. The same may be said of the jecorin discovered by the authors in the egg yolk. Kolisch (R.) and v. Stejskal (K.). Ueber den Zuckergehalt des normalen und diabetischen Blutes. Aerztl. Cent. Anzeig. Wien., 1898, x, 36. A. S.

Leukæmia.

Drs. Thomson and Ewing, of Roosevelt Hospital, maintain that a great increase in the white corpuscles is not necessarily characteristic of leukæmia. The diagnosis, from the blood, depends rather upon the presence of such special forms of cells as the myelocyte. In a case reported by them, tissue infiltration was the most distinct-tinctive and pathologically the most significant feature. According to the authors: "Beside the changes in the bone marrow, it is interesting to note that in the liver were numerous deposits similar to the necrotic changes in this organ caused by the toxins of diphtheria. It is in cases of acute rather than in chronic leukæmia that we find so much that is suggestive of a primary infective etiology. The unique case reported by Obrastow, of a ward tender who had charge of a patient suffering from acute leukæmia, and who, four days later, was attacked by the disease, both patients then running a similar course to death, may have been only a coincidence, but it must be admitted that many histories of the acute form of this affection correspond more with infective processes than with any known form of systemic disease. The specific agent, however, and its mode of entrance, are entirely conjectural, though the occurrence of leukæmia in the lower animals, irrespective of the nature of their food,

whether they were herbivora or carnivora, rather negatives the supposition of the alimentary canal being the channel of the infection, unless by means of drinking water. The initial sore throat, however, in this patient''—the one in the case referred to above—" for some two weeks before any other symptom, and then the involvment of the arm, with subsequent subsidence before other developments elsewhere, offer some analogies to the infection of diphtheria.'' Thompson (W. H.) and Ewing (J.) A case of acute leukæmia. Med. Rec. N. Y., 1898, 53, 333 A. S.

The Determination of Iron in the Blood.

Citing the works of Drs. Neubert, Pomberg, Jellinek, and others, Dr. Jaroslav Hladik calls attention to the fact that, while the hæmometer of Fleischl is a convenient, and, in cases of diagnostic routine (particularly where a series of observations are being made with the blood of the same patient), generally of service, still the results of all determinations of hæmoglobin, and from these of the iron of the blood, by direct colorimetric methods, must be accepted with reserve, inasmuch as it is not proven that the intensity of the color of the blood stands in an exact ratio to the amount of hæmoglobin or oxyhæmoglobin which it contains. On the contrary, Neubert and Pomberg, and others, have shown that the readings of Fleischl's instrument are too low, the error becoming more apparent with the decrease in hæmoglobin, while Biernacki found invariably more iron in pathological blood than corresponded to the readings of the hæmometer. He came to the conclusion that the pallor of the blood, in many cases, was not owing to the diminution of hæmoglobin. It is also a fact that the intricate structure of the hæmoglobin can be modified, not alone by such bodies as carbonic oxide and the biliary coloring matters, but also by the nature of the proteids that are with it in solution. The composition of hæmoglobin, and particularly its percentage of iron, have not been satisfactorily determined, and the question is still open as to whether all the iron of the blood is contained in the hæmoglobin. This all makes the indirect determination of the iron of the blood by the hæmometer uncertain. The exact chemical determination requires so much blood (10–20 c. c.) that it is, in most cases, impracticable. Dr. Adolf Jolles (Deutsche m. Wchenschr., 1897, No. 10) devised an instrument called by him the "Ferrometer," which gives a much more reliable determination of the blood iron than the instrument of Fleischl. Its manipulation is, however, more complicated, and requires chemical technique. Jolles' method is both chemical and colorimetric. Take with a pipette 0.05 c. c. of blood and incinerate in a platinum crucible. The resulting rust-like spot is fused with 0.1 gm. of acid potassium sulphate, and the flux dissolved in hot water and washed into a graduated glass cylinder, which is filled to 10 c. c. One c. c. dil. HCl is added, and then 3.5 c. c. (0.75 per cent.) ammonium sulphocyanide solution, producing an orange color. The cylinder is closed with a glass plate and the contents thoroughly mixed by inverting. It is then filled to the top with the ammonium sulphocyanide solution and covered with the plate, care being taken to exclude air bubbles. A solution is prepared by fluxing, as above, iron with acid potassium sulphate, so that in each c. c. there are contained 0.1 gm. sulphate and 0.00005 gm. iron (about twice the iron contained in 0.05 c. c. normal blood). Of this solution 1 c. c. is introduced into a second cylinder, identical with the first, but having a tubulature with cock at the base ; the cylinder is filled to 10 c. c. with water and 1 c.c. HCl and 4 c.c. ammonium sulphocyanide added, the whole being mixed. Both cylinders are now placed in a proper stand and the color intensity of their contents compared, observations being made downward through the columns. The solution in the comparison cylinder is drawn off through the tubulature, until the color of the columns is of equal intensity, when a reading is taken. From a table the amount of iron, and from this the approximate amount of hæmoglobin, may be learned. The whole process need not occupy more than 15 to 20 minutes. Many precautions are necessary, which the author gives in detail. At least two determinations should be made and the average taken. Hladik (J.), Untersuchungen über den Eisenge-

halt des Blutes gesunder Menschen Wiener klin. Wchenschr., 1898, xi, 74–77.

A. S.

Heller's Test for Blood Pigment in the Urine.

Arnold draws attention to the fact that Heller's blood-test is referable to the formation of hæmochromogen or reduced hæmatin, and not to hæmatin proper, as has hitherto been stated in all text books on clinical diagnosis. The spectrum of hæmochromogen is extremely characteristic, and can be recognized yet in dilutions, where that of oxyhæmoglobin and its derivatives can no longer be obtained. He hence suggests that in doubtful cases, after the addition of caustic soda and boiling, the sediment be examined spectroscopically, and best of all with an ordinary pocket spectroscope. It is claimed that in this manner a positive result may still be obtained, where the chemical examination alone is insufficient. The spectrum of hæmochromogen shows two bands of absorption: one narrower, but more marked and defined than the other, between D and E, but further removed from D toward the violet end of the spectrum than the first band of the oxyhæmoglobin; the other wider but less marked than the first, about E. The first in itself is really characteristic, as the second is not always visible in dilute solutions. Arnold (V.) Berlin. klin. Wchnschr., 1898, xxxv, 283.

C. E. S.

Methylene Blue and the Renal Function.

Dr. Tomlinson presents the results of administering methylene blue to six patients suffering from renal lesions. He finds that it takes from 1½ to 3 hours for the methylene blue to permeate the kidneys (to appear in the urine) of persons in apparent health, after being injected hypodermatically. Dr. Archard and Dr. Castaigne (Le Bulletin Médical, June 23, 1897.) report the trial of methylene blue as a test of the permeability of the kidneys, in 50 cases, as follows: In 22 cases, elim. normal; 5 autopsies; sound kidneys: 28 cases; tardy elimination; 13 autopsies; kidney lesions. The six cases referred to above are given in detail, supplemented by tables. From a study of them, Dr. Tomlinson is led to the conclusion (reached also by Lemoine, Therap. Gaz., Oct. 15, 1897, 680.) that the methylene blue exerts a selective influence upon the secreting epithelium of the kidneys, whereby the excretion of albumin is diminished, while that of urea and the quantity of liquid are augmented and casts disappear. Marked improvement in the patient is to be expected in parenchymatous nephritis. Dr. Tomlinson is of the opinion that the drug is used to the best advantage as a test of the permeability of the kidneys, and in the earlier stages of chronic Bright's disease, as well as in those cases of renal inadequacy occurring as concomitants of acute infectious and contagious diseases. Tomlinson (H. A.) The dissipation of albumin and casts from the urine by the administration of methylene blue. Northwest Lancet, St. Paul, 1898, xviii. 61.

A. S.

The Estimation of Xanthin Bases in the Urine.

240 c. c. are treated with 30 c. c. of Ludwig's magnesia mixture, when a 20 per cent. solution of ammonia is added to the 300 c. c. mark. The mixture is filtered at once. Of the filtrate two portions, each of 125 c. c., corresponding to 125 c. c. of urine, are treated with ammoniacal silver solution and filtered. The precipitate is washed until every trace of ammonia has been removed, when the contained amount of nitrogen is estimated according to Kjeldahl's method. The result indicates the alloxur bodies' nitrogen, from which the uric acid nitrogen, determined according to Hopkins' method, for example, is deducted. The difference corresponds to the alloxur bases' nitrogen. The calculation of the xanthin bases is then made upon the basis that 36.295 gm of nitrogen represent 100 gm of a mixture of xanthin, hypoxanthin, paraxanthin, heteroxanthin, carnin and guanin. Arnstein (R.) Zeitschr. f. physiol. Chem., xxiii, 417.

C. E. S.

On the Estimation of Nitrogen by the Kjeldahl-Wilforth Method.

Filter and precipitate are placed in the digesting flask and treated with sulphu-

ric acid containing phosphoric anhydride in the proportion of 200 gm for 1000 c. c. of sulphuric acid. This solution is kept as a stock solution. In the case of urine, 15–25 c. c. of the mixture are sufficient. A small drop of mercury is then added and the process conducted as usual. Congo is suggested as indicator in the final estimation of the ammonia. de Bœhtlingk (R. R.) Arch. des. sc. biol. de St. Petersburg., v., 176.

C. E. S.

Genito-Urinary Epithellum.

Carpenter maintains that authors of modern text-books on urinalysis lay far too little stress upon recognizing and determining the exact source of the epithelial cells found in the urine, and their pathological significance. He believes that there is sufficient difference in the size and shape of epithelial cells found in the urine to determine the previous location of the cells, and he asserts that a more accurate diagnosis of the exact seat and extent of a lesion may be made by this means than from the symtomatology. The cells from the renal tubules, he says, are always round; but those from the larger collecting tubes tend towards the battledore shape. In size the cells from the smaller tubules are a little larger than a pus corpuscle; while those from the larger tubules are half as large again as a pus corpuscle. The only cells at all like the renal in appearance are those from the urethra and its accessory glands; but the former are usually accompanied by casts and the latter by pus. The superficial cells of the pelvis of the kidney are of the battledore shape; while cells from the deeper layers are slightly larger and round. Epithelial cells from the ureters are of the spindle or double caudate variety, and from the superficial layer of the bladder they are of the large squamous type. In chronic cystitis, however, when coming from the deeper layers, they may simulate in shape the epithelial cells from nearly all portions of the urinary tract. At the neck of the bladder the cells again become smaller, more nearly circular and highly refractive. Cells from the male urethra, between the prostatic portion and the fossa navicularis, are usually round and somewhat larger than pus corpuscles. However distinctive the author believes this description to be, he admits that epithelial cells are elastic and change their shape, especially when acted upon after detachment by the saline urine; and that in shock, inflammation, etc., size and conformation are still further modified.—Carpenter (T. B.) Buffalo M. J., 1898, xxxvii, 651. (It seems to us that the author refutes his own argument.)

G. W. J.

Hæmospermia.

Lichowetzer reports three cases of hæmospermia, and gives a complete review of all thus far reported. In the one case, bloody semen was ejaculated by a student, aged 23, after having practiced coitus six times in one night. In the second case the same result followed, the individual having remained abstinent for two years preceding the attack. In the third case, which was associated with gonorrhœal epididymitis, hæmatospermia occurred several times, and was accompanied by symptoms of peritonitis. Recovery followed in all cases, but in the third, which undoubtedly was of inflammatory origin, complete azoospermatism resulted. In the case of the other two, an excessive hyperæmia is suggested as the basis of the abnormal phenomenon. Lichowetzer (L.) Hæmospermia. Diss., Berlin, 1898.

C. E. S.

Immunizing Against the Staphylococcus Pyog. Aureus.

Dr. O. Kose, experimenting on goats, tried first to immunize with cultures of the coccus, proceeding from attenuated ones to those of full virulence. The animals died, either at once or from general, prolonged cachexia. Serum drawn from the immunized animal, prior to death, injected direct into the blood current of rabbits produced in them more or less immunity. The serum causes agglutination in cultures of the germ, and stops, either partly or wholly, further growth. Dr. Kose thinks the staphylococcic anti-

toxic serum would give better practical results than the streptococcic, because the staphylcoccus does not occur in so many varieties as the streptococcus. From the agglutinizing properties of the serum he feels that, in suspected staphylococcic infection, a serum diagnosis, similar to Widal's reaction in typhoid fever, would be possible. It would be of service in doubtful cases of osteomyelitis, endocarditis, septicæmia, etc. Kose (O). Wien. klin. Rundsch., 1898, xii, 5.

A. S.

The Bacteriology of Acute Articular Rheumatism.

Achalme describes an anærobic bacillus which he claims to have found shortly after death in two cases of rapidly fatal acute articular rheumatism. In both, the organism was found in pure culture, being present in large numbers in the pericardial fluid, the heart muscle, and the cerebro-spinal fluid; while they were less numerous in the other organs of the body and in the blood. He further reports six other cases where the bacillus could be demonstrated in the circulating blood by culture, while the direct microscopic examination furnished negative results only. Morphologically the organism resembles the anthrax bacillus on the one hand, but differs from this in the variability of its length. On artificial media, on the other hand, it approaches the bacillus of malignant œdema. The formation of spores and their appearance, however, is different. It is stained by Gram's method, and manifests decided pathogenic properties when injected into guinea pigs, while mice and rabbits are more resistent. In the human being it may be associated with other bacteria, and more especially with streptococci, disappearing, when secondary infection occurs with these. Achalme regards the organism as the probable cause of acute articular rheumatism. Achalme, (P.) Annales de l'Institut Pasteur. Nov., 1897.

C. E. S.

A New Volumetric Method of Estimating Uric Acid in the Urine.

The method is, in reality, but a modification of that suggested by Hopkins, the end result is attained, not by oxidation, but by the formation of a uric acid salt—piperidine urate. Piperidine combines with uric acid in molecular proportions, forming a soluble salt. The uric acid is separated from 100 c. c. of urine, as a urate, by ammonium chloride and freed by HCl, according to Hopkins; it is washed with as little cold water as possible, until the wash water gives no reaction with Congo paper; it is then washed off the filter with 20-30 c. c. hot water and titrated, at the boiling point, with 1-20 N. piperidine solution, using phenolphtalein as an indicator. 1 c. c. 1-20 N. piperdine solution contains 0.00425 gm. piperidine, which is equivalent to 0.0084 gm. of uric acid. Therefore, the number of c. c. piperidine solution used in titration, multiplied by 0.0084, equals the number of gm of uric acid in 100 c. c. of urine. Tunnicliffe (F. W.) and Rosenheim (O.), Brit. M. J., 1898, i, 364.

A. S.

A New Instrument for Taking the Blood.

Dr. Moore, of Cornell, has devised a spring-needle lancet, whose virtue consists in causing less alarm in the nervous patient, insuring ease and certainty to the operator, and permitting of complete sterilization. It is composed of a metal case containing a spring and plunger. To the latter is attached a triangular-pointed needle, which is drawn back and concealed, for use, and is liberated by means of a trigger in a longitudinal slot in the side of the case. The depth of the puncture is regulated by a screw-cap through which the needle is operated. Moore, (V. A.) The Hæmospast. Tr. A. Mic. Soc., Buffalo, 1897, xix, 186–188.

A. S.

Reprints and Pamphlets Received.

Fite (C. C.) Solution of the proprietary-medicine question. Repr. Phila. M. J., March 5, 1898. Brokaw (A. V. L.) Some conclusions drawn from experiences in pelvic surgery. Also: An exhibition of radiographs with remarks. Repr. Trans. Southern Surgical and Gynecological Assoc., 1897. Robbins (H. A.) Non-venereal syphilis. Repr. J. Cutan. & Genito-Urin. Dis., N. Y., May, 1897. Also: Syphilis of the innocent. Repr. Maryland M. J., Jan. 23, 1897. Also: The treatment of syphilis. Repr. Maryland M. J., Feb. 13, 1897. Also: The treatment of syphilis. Repr. Maryland, M. J., Apr. 3, 1897. Also: Cerebral syphilis. Repr. Maryland M. J., Apr. 17, 1897. Also: Syphilis. Repr. Maryland M. J., May 8, 1897. Also: Syphilis. Repr. Maryland M. J., Aug. 14, 1897. Also: Syphilis. Repr. Maryland M. J., Nov. 6, 1897. Also: Dangers of the barber shop. Repr. Maryland M. J., Jan. 29, 1898. Johnson (J. T.) Vaginal vs. abdominal operations for pus in the pelvis. Repr. Am. Gynec. & Obst. J., Feb., 1898. Edebohls (G. M.) The inguinal operation for femoral hernia. Repr. Post Graduate, Feb., 1897. Also: The other kidney in contemplated nephrectomy. Repr. Ann. of Surgery, Apr., 1898. Eastman (J.) Diagnosis in abdominal disorders. Also; The question of pelvic support. Repr. Am. Gynec. & Obst. J., Feb., 1898. Bell (C.) and others. The truth about cigarettes. Repr. Med.—Legal J., Dec., 1897 and March, 1898. Transactions Section of Ophthal., College of Physicians of Phila., March 15, 1898.

BIOCHEMISTRY IN RELATION TO MEDICINE AND HYGIENE.

UNDER THE CHARGE OF
E. A. DE SCHWEINITZ, Ph. D., M. D.,
Director Biochemic Laboratory, B. A. I., Agricultural Department.

ORIGINAL CONTRIBUTION.

THE MINERAL CONSTITUENTS OF THE TUBERCLE BACILLI.*

BY E. A. DE SCHWEINITZ Ph. D., M. D.,
and MARION DORSET, M. D.

In the American Chemical Journal for August 1895, the writers published the results of some analyses showing the composition of the tubercle bacilli when grown upon different media. Depending upon the character of the media used, the amount of ash varied from 2 to 4 per cent. It appeared that it would be of interest to make a careful analysis of the ash in order to see which of the mineral constituents of the animal body were utilized by the germ in largest quantity and were consequently necessary for its satisfactory development. The bacilli used for this work had been grown upon neutral beef broth containing 1 per cent. of peptone, ½ per cent. of salt and 7 per cent. glycerine. The cultures after first being heated in order to kill the germs, were filtered and washed well with boiling water. The washed bacilli were then dried over sulphuric acid, finely powdered, and thoroughly extracted with pure ether and 98 per cent. alcohol. After the last extraction the bacilli were again dried and ignited at a low red heat until practically all the carbon had been burned. The ash, which was almost pure white in color, was dried to a constant weight at 100 degrees centigrade. The total ash available for analysis was 1.453 gm. Examination showed that sulphates, chlorides and carbonates were not present in the ash. The methods used for the determination of the constituents of the ash were those prescribed for the analyses of the ash of plants. The results calculated upon the dry ash were as follows:

	Na_2O	13.62 per cent.
	K_2O	6.35 "
Lime	Ca O	12.64 "
Magnesia	Mg O	11.55 "
Carbon and silica		0.57 "
Phosphoric Oxide	P_2O_5	55.23 "

The high percentage of phosphoric acid and the absence of other acid radicals in this ash are very noticeable. While it is probable that some of the chlorides and sulphates may have been washed out of the germ in the process of preparing it for analysis, the fact that the amount of phosphoric acid obtained in the ash is slightly lower than the total amount of phosphoric acid obtained from the whole germ, would indicate that chlorides and sulphates are practically of no importance in the composition of the germ, while their presence in the culture media in minute quantity, appears to be necessary for the satisfactory development of the germ. Chlorides and sulphates if dissolved out would have been present probably as cell contents rather than a part of the germ.

Ash analyses of comparatively few germs have been made and the only ones which give data that may be reported here are the analyses made by Cramer, Archiv für Hygiene, Vol.

*This article will appear simultaneously in the American Chemical Journal.

xxviii, No. 1, who found that the composition of the ash of the cholera germs varies greatly, depending upon the quantity of sodium chloride and sodium phosphate that were used in the preparation of the media. In normal media the results were as follows :

Cl	17.02 per cent.
$P_2 O_5$	20.48 "
$S O_4$	8.55 "
K	6.32 "
Na	32.06 "
Ca	0.98 "
Mg	trace.

These results differ greatly from those found in the examination of the ash of the tubercle bacilli. As noted above, the media used for the growth of these latter germs was a normal material containing ½ per cent. of salt, but without the addition of any mineral phosphate or other salts. Consequently, the high percentage of phosphoric oxide can be attributed only to the fact that this element as well as the calcium and magnesium are absolutely necessary for the development of the tubercle bacilli, and were derived from it by these elements as normally present in the beef broth. In arrested cases of tuberculosis in animals, we often find hard gritty, calcareous nodules. These nodules in healed tuberculosis contain tubercle bacilli. In other cases of healed tuberculosis where calcareous nodules are not present, no bacilli are as a rule found. It is easy to trace a very close connection between these nodules in healed tuberculosis, and the composition of the ash of the germ.

The high percentage of fat contained in the body of the tubercle bacilli, which we have noted in previous papers, taken in conjunction with these high percentages of calcium and magnesium phosphate in the ash, give grounds for some interesting speculation. Phosphates and cod liver oil are two materials always strongly recommended in cases of tuberculosis. As the germs of this disease seem to demand in large quantity food containing phosphorus and also rich in fat, it is but a fair supposition to say that in giving the drugs above mentioned, we are but supplying to the animal body those constituents which are very important for its proper nourishment, the supply of which is continually being levied upon by the germs of the disease. The question might be asked whether in this method of treatment we are not really feeding the bacilli rather than the individual. But just as an exhausted soil can be made valuable by the addition of constituents which are deficient, so may we assume that the administration of specific materials which contain the elements that the germ has utilized, should act in a similar way in increasing the vitality in the animal body. These of course are speculations, based however upon certain known data. We trust that a still further study, which is in progress, including the albuminoid constituents of the tubercle bacilli, may also throw some light upon their chemical action and development in the body.

March 15, 1898.

SELECTIONS.

The Antitoxin in the Blood and Organs of Horses Immunized against Diphtheria.

The author has undertaken to determine in which organs, tissues and fluids of a horse, immunized against diphtheria, antitoxin is contained. He first estimated the amount of antitoxin contained in the blood, in the serum, the plasma, the white blood corpuscles and the red blood corpuscles. The method used for determining the amount of antitoxin depended upon noting the quantity that must be

mixed with the toxin to prevent infiltration at the point of injection. He found that fibrine, dissolved in a 10 per cent. solution of sodium chloride, did not posses any antitoxic properties, and the coagulum of the blood did not contain any antitoxin, except what might be mechanically incorporated. The blood plasma and the serum showed the same antitoxic properties. The red corpuscles were found to contain no traces of antitoxin. When the white blood corpuscles were extracted and examined, it was found that the extract contained very little antitoxin, and that the serum, which in addition contained the extract of the white blood corpuscles, was not any richer in antitoxin than the plasma.

The organs were studied in the following order: Liver, spleen, kidneys, ovaries, superrenal glands, inguinal glands, bronchial glands, salivary glands, thyroid bodies, Graafian vesicles, heart muscle, healthy muscles, hypertrophied muscles of the body, marrow of the bone, spinal column and the brain. As the antitoxin is easily soluble in water it can be found in the extracts of these organs. The organs were cut in fine layers, enveloped in a linen cloth with very fine meshes, and placed together with some glycerine beneath the piston of an hydraulic press. By increasing the pressure slowly a little of the juice of those organs as porous as the spleen was easily extracted. This extract was centrifugalized in order to separate mechanically suspended particles. In expressing the brain it was found that the linen cloth was impracticable, and therefore a filter of felt was used. The material was tested in the same way as in the case of the blood, and the quantity of antitoxin determined by the following method of mixture, of toxin and antitoxin. The point of neutralization was considered reached when there was no longer any infiltration in a guinea pig at the point of injection of the mixture. In the work upon the quantity of the toxin contained in the different organs, several immune horses which had died from a loss of blood in drawing serum were used. The horses were bled ten days after the injection of toxin and each of them had received 400 c. c. of toxin, 0.05 c. c. of which was sufficient to kill a guinea pig, weighing 250 gm., in 48 hours. Some of the horses received the toxin in the vein and others received it under the skin. The final results can be seen from an examination of the following table:

The following figures indicate percentages.

	Horse No. 43. (Expt. 1.)	Horse No. 74. (Expt. 2.)	Horse No. 5. (Expt. 3.)	Horse No. 18. (Expt. 4.)
Plasma	70	40	60	60
Graafian vesicles	70	45	.....	.....
Kidneys	.....	15	40	.....
Ovaries	30	.....	.....	.....
Bronchial glands	30	10	.....	.....
Superrenal glands	30	10	20	.....
Salivary glands	.....	.....	25	.....
Heart muscle	20	8	.....	.....
Inguinal glands	20	5	.....	.....
Liver	10	10	.....	.....
Spleen	.....	5	.....	.....
Healthy muscles	10	1	1	.....
Hypertrophied muscles	.....	.....	.....	60
Thyroid gland	.....	.....	1	.....
Spinal cord	10	1	.....	.....
Brain	1	0.5	.....	.....
Marrow	0.1	1	.....	.....
White globules	.....	1	.....	.....
Red globules	.....	0.1	.....	.....

We see from these results that the serum and serous liquids, the contents of the Graafian vesicles and the infiltration of the muscles at the point where the injections are made, contain the largest quantity of antitoxin. It is interesting to note that the contents of the Graafian vesicles have the same quantity of antitoxin as the serum. Possibly the heredity of immunity can be traced to this fact. The solution of this problem of course demands further experiments. In the other organs, the content of antitoxin appears in the following order: First, the kidneys, then the superrenal glands, then the salivary and lymphatic glands, then the liver, spleen, the thyroid glands, the muscles of the heart, spinal cord, the brain and the marrow. The least quantity of antitoxin was found in the red and white corpuscles of the blood. The heart muscle contained less antitoxin than the muscles of the body. It is not possible to determine definitely where these antitoxins originate, but the results as they appear in the table permit the conclusion that the antitoxin is formed in variable quantities in different organs, and that from these organs it passes into the serum,

in which considerable quantities accumulate. The results make possible also another supposition. As already noted, considerable quantities of the antitoxin are found in the kidneys. This may be explained in two ways. The kidneys are primarily a place where antitoxin is most rapidly produced, or the antitoxin appears in the kidneys preparatory to being excreted in the urine. If the first supposition is correct, the venous blood should contain more antitoxin than the arterial blood, but experiments which were made to determine this point have not shown any appreciable difference. If the second supposition is correct, then some of the antitoxin should be excreted in the urine. The results of an experiment to prove this show that it is excreted in such quantity that from two to four cubic centimeters of urine will neutralize 0.3 c. c. of normal toxin. There is also some antitoxin in the sweat. This explains easily the loss of immunity in an animal if the animal does not receive the injection of the substances necessary for the elaboration of antitoxin. Koudrevietsky has found in an animal killed two hours after a fatal dose of diphtheria toxin was injected, that the toxin was present in the kidneys and other organs. On the contrary, if the animals were killed twenty to thirty hours after the injection, no toxin was found in the kidneys and other organs, but a considerable quantity of antitoxiu was found. The author thinks these experiments show that the injected toxin is transformed in every tissue of the animal body, from which the antitoxin passes into the serum, and may be lost by excretion in the urine and sweat. Dzerjgowsky (M. S. K.) De l'antitoxine dans le sang et les organes des chevaux immunisés contre la diphthérie. Archives des sciences biologiques, St. Petersburg, 1897, v. 123.

The Bactericidal Constituents of Animal Cells.

The question naturally arises what changes are produced in the animal body by the injection of immunizing serum which will suddenly make it insusceptible to previously very pathogenic organisms. Metschnikoff's explanation is increased phagocytosis, but as Pfeiffer has shown in connection with cholera infection, phagocytosis is not necessary. In passive immunity, experiments have shown that there is some other action besides phagocytosis to explain the results. The same experiments point to the fact that the different cells of the body take a very active part in the production of immunity. A. Kossel and the writer were the first to prove that nucleinic acid, the normal constituent of the cells, exerted a bactericidal effect. One-half per cent. solutions of nucleinic acid prepared from the thymus gland were sufficient to destroy the cholera germ in three to five minutes, streptococcus in 2¼ hours, typhoid bacillus in one hour to one and one-half hours, the staphylococcus in 6 hours. This destruction was not due to the acid reaction but probably to the property of the nucleinic acid which exerts a very strong coagulating effect upon albumin. According to the researches of A. Kossel it appears probable that the basic albuminoid body and the cell histon is a combination of albumin and protamins, just as nuclein is a combination of albumin and nucleinic acid. As the the nucleinic acid in acid solution gives with albuminoid bodies a precipitate, so does protamin give with the same bodies in weakly alkaline solution, a precipitate. The supposition also seems correct that the protamin molecule is the basis of the albuminoid molecule and that protamin should be regarded as the simplest albuminoid body. Kossel concludes this from the fact that protamin has certain properties in common with albuminoids, as the biuret reaction, the formation of toxic properties, as histidin, arginin, lysin, and is digested just as other albuminoid bodies by trypsin. Free protamin has up to the present time been found only in fish sperm. In order to test the properties of protamin, sturin sulphate was used from which the free protamin could be obtained. In dilute solution free protamin or its carbonate exert a fairly strong bactericidal action. One part of protamin carbonate to 50,000 will destroy the cholera spirillæ. In stronger solutions the spirillæ are immediately destroyed. As a rule a solution of one part to 10,000 was sufficient to destroy

typhoid bacilli in 4 hours. The solution of one to 1,000, in 24 hours will destroy the staphylococci. Experiment further showed that the presence of albuminoid bodies in the serum does not interfere with the bactericidal action of protamin, although the bactericidal action is somewhat reduced. They showed further that albuminoid bodies of simple composition which are present in the normal constituents of the cells of the animal body, exert a strongly bactericidal action, while nucleinic acid appears outside of the cell in a free form only seldom. As decomposition products of the same sort as those yielded by protamin are obtained from various albuminoids, both in the animal and plant kingdom, the supposition is a fair one that in the cells of other organs the same or similar substances occur.—Kossel. Ueber bactericide Bestandtheile thierischer Zellen. Zeitschr. f. Hyg. u. Infectionskrankh., Leipz., xxvii, No. 1.

Studies in Agglutination: the Agglutinable Substance.

Nicolle after making a study of the agglutination of the bacillus coli communis, the typhoid bacillus and other germs, comes to the conclusion that the phenomenon of the agglutination of bacteria can be attributed to a special substance which they contain. The living germs that have been destroyed by heat or by the addition of certain antiseptics react practically in the same way. Filtered cultures treated with antitoxic serum give masses of matter which are visible to the naked eye, and under the microscope appear to be identical with the masses of microbes. In order that this result shall be obtained it is necessary that the mixture of filtered cultures and serum shall be allowed to stand from 5 to 20 hours. The reactions are specific as no other serum than that which is homologous will give rise to them. The bodies of bacteria from young cultures after they have been washed with distilled water will show the agglutination with the serum very rapidly. They react more slowly if the cultures are old. The solution obtained by macerating the bodies of the young germs and filtering, acts just as the filtered cultures. The presence of this agglutinable substance in the body of the microbe is constant and it appears that this agglutinable substance is an integral part of the composition of the germ. This agglutinable substance is very resistent to various physical action as heat, cold, sun-light, pressure and desiccation. The addition of a number of antiseptic substances does not interfere with the phenomena. The agglutinable substance is soluble in water, in alkali or dilute acids. It is also soluble in absolute alcohol and in ether. The body of the germ contains therefore the agglutinable substance, and as the germs disintegrate, some of it passes slowly into the culture media. The chemical composition of this substance is not yet known. Krouse has found in cholera cultures a substance practically allied to peptone or alkali albuminates. The agglutinable substance of the typhoid germ differs very essentially from the soluble toxin of the typhoid germ described by M. Chantemesse. The agglutinable substance is contained in the external coating of the microbe. If one inoculates a culture medium to which some antitoxic serum has been added with the homologous germ this germ will develop quite well. The conclusion upon the nature of the phenomena of agglutination agrees with that of Gruber and M. Roger, in that the coagulation and coalescence of the internal coating of the agglutinable microbes is acted upon by the agglutinating serum. The coagulation therefore is a purely passive phenomenon. The virulence, toxicity, life and preservation of the form of the microbe do not play any rôle. The agglutination has nothing in common with the bactericidal property of the serum with which it has often been confounded. The bactericidal property of the serum is destroyed at 60 degrees, while 60 degrees is without action upon the agglutinating substance which is just as resistent to heat as the agglutinable substance from which it is derived. Neither is the agglutinating property necessarily a sign of infection, since a microbe deprived of its virulence will cause agglutination. It is simply an indication of the passage in the organism of the specific agglutinable substance. Recherches sur la substance agglutinée. Nicolle (M. C.) Ann. de l'Inst, Pasteur, 1898, xii, 161.

Therapeutic Notes.

Dr. Graham, of Soho Road, Birmingham, England, writes that he finds Dr. McArthur's Chem. Pure Hypophosphites a most valuable medicine in obtaining results in the treatment of consumption; a cavity at the apex of the right lung terminating in complete recovery after its prolonged use.

Imperial Granum is successful not only as an aliment for children, but its rare nutritive excellence in inanition, due to mal-assimilation, chronic, gastric and enteric diseases, has been incontestably proven. Often Imperial Granum has been the only nourishment the stomach would tolerate when life seemed depending on its retention.

One of the chief obstacles to efficient local medication has been the lack of a topical remedy which could safely be entrusted to the patient. This want has been fully supplied in Micajah's Medicated Uterine Wafers. These wafers are clean, unirritating, easily applied, and their ingredients exert a depleting effect upon the engorged mucous membrane.

Digestive disturbances are frequent in springtime. Just's Food should be prescribed for loss of appetite, languor, biliousness, etc., and is valuable in these conditions, because it is palatable, easily digested and nutritious.

J. Stewart Norwell, M. B., C. M., B. Sc., a very prominent Edinburgh medical man, has arrived at the conclusion that Antikamnia is a specific for almost every kind of headache. It can be very easily taken, being practically tasteless, and the dangerous after-effects so commonly attendant on the use of many other analgesics are entirely absent.

In the Louisville Medical Monthly, Dr. George Suttie, of Harper Hospital, writes as follows: In 1896, 112 patients were admitted to the diphtheria ward of the Contagious Hospital, 12 being subjected to intubation, 6 to tracheotomy, with only 5 deaths, "three of these being moribund and dying within a few hours of their arrival." There was, therefore, a mortality of 1.8 per cent. These cases received the Parke, Davis & Co.'s serum.

In the treatment of gout, lithæmia, chronic rheumatism and the uric acid diathesis, the best agent at our command is the Bitartrate of Lithium. This is best administered in the form of effervescent Tablet Lithos (Mulford), which is a highly efficient combination of this salt with Sodium Salicylate (recens). Lithos acts promptly, and does not cause gastric disturbance.

In a recent paper read before the Inter-County Medical Society of Wisconsin, Dr. A. W. Wilmarth, Superintendent of the Wisconsin Home for Feeble Minded, says that during the last five years he has experimented with some of the better known hypnotics, and with regard to Trional, he states that its administration is never followed by depression.

Jerome K. Banduy, M. D., LL.D., St. Louis, Mo., says that the results obtained from Liquor Mangano-Ferri Peptonatus, Gude, were a surprise to himself, for the concomitant deranging sequelæ were so slight, that but in a very few instances in his extensive utilization and experience with this special pharmaceutical preparation was he obliged to discontinue it.

Markleton is in the Allegheny mountains, only six hours from the capital of this great country. The Markleton Sanatorium has all the elements necessary for an ideal health resort. It is just the place for convalescents who need rest and change of scene, and those who are sick will receive every care from its competent medical staff.

Blackistone Island Mineral Water issues from a depth of 360 feet, through 200 feet of rocks, and its location on a small island, surrounded by salt water, constitutes sufficient guarantee of its freedom from surface pollution. In diseases of the bladder and kidneys it is fully the equal of any of the higher-priced waters.

It is generally agreed that the treatment of hay fever resolves itself into: 1. restoring tone to a hypersensitive and disordered nervous system, and 2., relieving the distressing symptoms referable to the naso-pharynx. This last may be accomplished, so the leading specialists everywhere say, by spraying the throat and nose with Firnol Comp., a safe, sure and speedy remedy.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

EDITING COMMITTEE:

W. W. JOHNSTON, M. D., GEO. M. KOBER, M. D., JAS. D. MORGAN, M. D.

MEETING OF DECEMBER 1, 1897. Dr. S. C. Busey, President, in the Chair.

FIBRO SARCOMA OF THE UTERUS.

DR. I. S. STONE presented a specimen, with the following history:

Mrs. S. was first seen by the reporter in Sibley Hospital in January, 1897. She had a tumor filling the pelvis and extending upward to the umbilicus. It had all the characteristics of a hard fibromyoma and had caused such severe hemorrhages as to give the patient the appearance of extreme anæmia. In addition to the anæmia she had a loud mitral murmur and a very weak heart, so that the case was as unpromising as it well could be if one hoped to perform hysterectomy successfully. She was given good treatment and told to wait until her health had improved before the operation could be performed. On September 21st I had her placed in Columbia Hospital. The condition of the patient had somewhat improved and after some preliminary treatment, hysterectomy was performed on the 29th of September. The patient bore the operation better, and had less shock, than was expected. Her convalescence was fairly good and there was at no time any symptom which gave any cause for anxiety.

The changes in this fibroid tumor have gradually taken place and what at first looked like cystic degeneration is now known to be sarcoma. The examination was made under the direction of Dr. Walter Reed, U. S. A., at the laboratory of the Surgeon General's office. We are always anxious about recurrence in these cases.

CARCINOMA OF THE UTERUS.

DR. I. S. STONE presented a specimen with the following remarks:

This uterus was removed through an abdominal incision, on October 13, 1897. The patient was a negro, age 47 years, who had borne 10 children, the last 15 years since. She was first admitted into Columbia Hospital, April, 1897. Having a lacerated cervix, trachelorrhaphy was done. This was followed by the menopause and occlusion of the cervix. In August and September she complained of pain in or around the uterus and was again admitted to the hospital. Her general condition was good and, save a small mass in or behind the broad ligament of the left side, and in close proximity to the uterus, she had nothing which appeared to indicate an operation. The uterus was not much if any, larger than normal. Her pain continuing, we consented to operate, and accordingly this

specimen was removed. After opening the abdomen and drawing the uterus, into view, a nodule like a small fibroid appeared on the middle posterior surface, which proved to be a degenerating or cancerous growth.

APPENDICITIS.

Dr. I. S. Stone presented a specimen with the following remarks:

The patient felt the first symptoms of pain and distress on Sunday, September 17. On the day following she was still uncomfortable, although she did not send for her physician. On Tuesday she grew worse and called Dr. W. F. Luckett. He saw her a second time that day and, finding her with a temp. of 102° and pulse 110, pain at McBurney's point, called me to see her early Wednesday. An operation was done that day. The appendix was in a state of extreme distention and stood erect, when the coils of intestines were separated and pushed aside. It was found to be gangrenous throughout its interior, and the thin peritoneal coat only stood between the girl's life and grave danger. The operation presented no unusual difficulties and the patient promptly recovered.

DISCUSSION.

Dr. J. Taber Johnson said: The possibility of the malignant degeneration of fibroid tumors was a very interesting question. This case was an illustration that advice as to non-removal could not be safely followed. These tumors did undergo many forms of degeneration, and there was often pus in connection with them and with the tubes, sometimes causing a general infection. There were a good many cases where pus tubes had been removed with fibroid tumors. If a tumor was not giving any trouble there was no occasion to perform hysterectomy, but still they were dangerous, and anybody would be better off without than with them.

Meeting of December 8, 1897,
Dr. S. C. Busey, President, in the Chair.

CANCER OF THE STOMACH.

Dr. W. A. Caldwell presented a specimen with the following history.

H. R., aged 63, white, a native of Canada, and clerk by occupation, consulted me at my office on February 28, 1897, for dyspepsia; his weight had been reduced from 210 pounds in September to 155 pounds. His appetite was almost gone although he was taking large quantities of milk and liquid food, as he said it relieved the gnawing sensation in his stomach. His most serious complaint was the excruciating pain located in the left hypochondriac region, when he had a movement of the bowels. The blood was examined by Dr. Carroll and he found only an increase in the number of leucocytes. A test breakfast could not be given owing to the objections of the patient. Therefore the absence or presence of H Cl., could not be proven. He began to drink at frequent intervals small quantities of milk as it was the only way he could find relief from the gnawing sensation in his stomach, and from April 15, to about June 10, he averaged 2 gallons per day. From about June 10, to the date of death, July 6, the presence of fluid in the stomach did not relieve the pain and oppressive feeling, and morphia had to be given hypodermically. About the first of June pressure in the left hypochondriac region did not produce pain and I was able to make an examination for the presence of a tumor but failed to find one, and while I considered it malignant yet I was not satisfied with my diagnosis, as neither nausea nor vomiting had occurred at any time.

The post mortem showed thickened abdominal walls, the omentum of a golden yellow color, thickened and enlarged, so much that it had evidently

taken on a peculiar if not malignant growth. I found the stomach firmly adhered to the speen and diaphragm, and the pleura and lung bound down to the diaphragm.

Dr. D. S. Lamb submitted the following report:

Stomach and portions of adjacent organs, pyloric and cardiac openings and a small portion of the fundus, normal; remainder of stomach converted into a firm, thick, cancerous mass, ulcerated on mucous aspect and measuring 5 inches from right to left. Firm adhesions to spleen and diaphragm; and on pleural side, to the lung. Spleen much softened by decomposition. Decomposition was far advanced in the viscera as received at the Museum.

DISCUSSION.

Dr. Geo. N. Acker said that several years ago he had presented a number of specimens to the Society, illustrating how difficult it was to make a diagnosis in cancer of the stomach. There had been no vomiting, no pain—nothing to indicate cancer of the stomach.

Dr. Bowen said he had recently had a case in which there was absolutely no pain or vomiting, and yet the patient died of cancer of the stomach. An interesting feature in the case reported by Dr. Caldwell was the amount of milk which the patient took every day.

Dr. Caldwell, in closing the discussion on his specimen, said that he had doubted whether the man really took two gallons of milk a day, but it was measured carefully after it came from the dairy, and it was impossible to keep him from drinking it, for that was the only way in which he could get relief, except from opium, and as between milk and opium he preferred to give him milk.

TUBERCULOUS TUMOR OF THE BRAIN.

Dr. G. N. Acker presented a case of uberculous tumor of the brain with the following remarks: When the child entered the hospital he had decided lung trouble, but was improving very much when the mother took him away. Some time afterwards he was re-admitted, and soon developed convulsions, followed by paralysis. The paralysis gradually increased, and it became apparent that there was a tumor at the base of the brain. The convulsions came on suddenly, the child being apparently perfectly healthy up to the time it entered the hospital, and the paralysis followed in about ten days, on one side of the body. The diagnosis seemed to lie between a tumor at the base of the brain and basilar encephalitis.

Dr. S. S. Adams said that this was one of the most interestlng cases that had been before the Society for some time. He had a case under observation that resembled this one very much, and it had been seen by Dr. Allen and Dr. French, the latter having made an ophthalmological examination, and there was no doubt in the minds of all that there was a tumor at the base of the brain, the only doubt being as to the nature of the tumor. The child has been in a condition of *status quo* for the last two months. There was lack of co-ordination in the upper extremities. This child presented the same symptoms as in Dr. Acker's case, except in a more aggravated form.

PREMATURE FŒTUS WITH CONSTRICTION OF THE CORD.

DEGENERATION OF FIBROID TUMOR.

Dr. Jos. Taber Johnson presented the specimens and histories of the above cases.

DISCUSSION.

Dr. Robert Reyburn said that a few months ago he had been called to see a woman with a fibroid tumor whom he had seen in 1863 with the same condition, so that she had been carrying that tumor about for nearly 35 years. This case showed that many fibroid tumors remained for a long time in a quiescent state. It was now about one-third larger than when he last saw it, but otherwise appeared to be in *statu quo*. The patient was now between 60 and 61 years of age, and was in fair health, attending to her ordinary duties.

Dr. Thos. E. McArdle inquired of

Dr. Johnson whether he did not think the woman had been wise to follow Sims's advice not to have the tumor removed, especially as the technique at that time was not as perfect as it is now.

Dr. Adajah Behrend said he had had a case similar to that related by Dr. Reyburn. This woman had had a fibroid tumor 35 years, and had now passed the menopause and was doing well.

The President said he supposed that every negro woman in town over 65 years of age had a fibroid tumor.

Dr. Behrend asked whether there was any way of knowing whether a tumor was degenerating or not except by opening the abdomen. It was pretty generally agreed that benign tumors might become malignant, but how were we to know when that change was taking place.

Dr. S. S. Adams said that he had seen Dr. Johnson's patient, and had known her about 18 months. He had insisted upon Dr. Johnson being called in, and at the first visit he pronounced it a tumor undergoing degeneration. He saw her several times afterwards, and advised an operation as soon as her condition improved sufficiently, but the family was not satisfied with this advice and Dr. Kelly was secured, and after examining her he said the tumor was a hard fibroid and that such tumors never underwent degeneration. Dr. Johnson, however, had insisted upon his two first points—first, as to his diagnosis, and secondly, as to the desirability of an operation. The patient finally decided to have the operation performed, and the case proved to be a degenerating fibroid. As to Sims' advice, he thought at the time it was given that it was good advice, but now the technique had been so improved that the mortality was very small. The argument that some people carry such tumors about for years and still live, did not mean anything. That was not scientific reasoning.

Dr. J. Taber Johnson said that he had arrived at his diagnosis of a degenerating fibroid by the fact that the tumor had always been described by the patient to her friends as a "hard" tumor and as one which had given her little trouble. She had had no unpleasant symptoms from the tumor up to within 6 months ago; since then she had had many symptoms, and it was easy to see that she was a broken down woman, for she had lost 30 or 40 pounds and was getting worse and worse. He knew she had no other disease to account for her symptoms and by bi-manual palpation he became satisfied that the tumor was not solid. He believed her symptoms were due to absorption of the fluid contents of the broken-down tumor.

Patients might, unquestionably, live many years with fibroid tumors, but this did not prove much, for his case showed that they did not always subside at the menopause. The menopause did not improve the condition, and the statement had been made by good authorities that degeneration takes place more rapidly and more frequently after menopause than before.

SENILE EPILEPSY WITH REPORT OF FOUR CASES.

By Charles Lewis Allen, M. D.

Abstract of a paper read before the Medical Society of the District of Columbia, December 8, 1897, published in the Medical News, March 5, 1898.

Epilepsy may begin at any age, but in the great majority of instances the first fit occurs in early life. When beginning after 55 the disease presents certain special features, hence only cases occurring at this period of life, and in which gross brain lesions and systemic intoxication can be excluded, are considered. The symptoms of senile epilepsy cannot be said to differ in any marked degree from those of epilepsy in earlier life, but atypical attacks especially those in which the convulsion is short or wanting, and the coma is profound and lasts a long time, seem common. The seizures do not as a rule occur frequently, seldom oftener than once or twice a month, sometimes only two or three times a year. Mental failure is common. Cases of epileptiform or apoplectiform attacks, occurring in old people, and rapidly recovering without paralysis were known to the older writers, and were by them ascribed to cerebral congestion.

Trousseau described such cases and said that he had learned to look upon them as epileptic.

Adams and Stokes published accounts of cases characterized by slow pulse and epileptiform or apoplectiform attacks, and and in which disease of the heart and arteries was present. Later writers have referred to this symptom-complex as the "Stokes-Adams Disease." Lemoine has given an admirable account of epilepsy of cardiac origin, and has made it dependent both on cerebral anemia, and on cerebral congestion. That acute brain anemia can produce epileptiform convulsions, was shown long ago by the classical experiments of Kussmaul and Jenner. In arterio-sclerosis, the calibre of the arteries of the brain is generally diminished, hence cerebral anemia can readily occur. Vaunya found that in peopie having arterio-sclerosis, firm pressure upon the carotids, would bring on epileptiform attacks, with great slowing of the pulse. While the same effect could never be produced, in those having healthy arteries. In the subjects of senile epilepsy arterio-sclerosis is practically always present.

Hence it seems likely that senile epilepsy, if not identical with, at least bears a close relationship to the Stokes-Adams disease, and it is evident that it is not an idiopathic, but a symptomatic epilepsy.

However, while arterio-sclerosis is probably the chief etiological factor, age, neurotic constitution, auto-intoxication and reflex influences may play a rôle and at times an important one. The treatment of senile epilepsy is practically that of arterio-sclerosis. Bromides do not seem to have the same influence over the occurrence of the fits that they do in earlier life, but combined with heart tonics, notably with caffeine, they may accomplish some good.

The following cases were observed by the writer during the past year:

1. Female, 74, previous history negative. Slight tremor of the hands and moderate arterio-sclerosis. No convulsions, but every two or three weeks has an attack of altered consciousness lasting about a half hour and presenting all the characteristics of the epileptic equivalent.

2. Male, 75. Black. Marked arterio-sclerosis. About twice a month typical "grand mal" attack.

3. Female, 74, senile dement. Moderate arterio-sclerosis. Has had in the past year 3 attacks; consisting of a short tonic spasm, followed by a long period of unconsciousness.

4. Male, 70, senile dement. Moderate arteriosclerosis. During two months under observation had two attacks, one severe, one "petit mal."

DISCUSSION.

Dr. Rupert Norton thought a distinction should be made between senile epilepsy and other forms of epilepsy occurring in old age. Epilepsy might occur in old age, and it was then more common in men than in women. There could be no doubt that there were really cases of true Jacksonian senile epilepsy, but the cases which Dr. Allen had mentioned seemed to be different. The fact that the attacks came on after strain pointed to the probability of its being due to anemia of the brain, but whether the resulting effect should be considered epilepsy or not he did not know. It seemed to him that the two diseases should be kept apart. In one of the cases mentioned by Dr. Allen the long period of unconsciousness—36 hours—seemed to indicate a different cause of the epilepsy. The uselessness of the bromide treatment in these cases also seemed to point to a difference in character. The use of heart tonics and iodide of potash would do more good than bromides, which in Jacksonian epilepsy was the remedy to use, while in true epilepsy the heart tonics would do no good. Of course there might be in old subjects an irritation of the cells from auto-intoxication, but this was a subject which physicians talked a great deal about but of which they knew little.

Dr. Thomas A. Claytor said that the cases reported by Dr. Norton seemed to resemble Stokes-Adams disease, which Dr. Allen considered analogous to senile epilepsy, but he thought it would be a good deal better to call it Stokes-Adams disease, for the symptoms were quite distinct. In Stokes-Adams disease there was a slow pulse, while all the cases reported by Dr. Allen presented attacks epileptiform in character and all had a normal pulse rate. Stokes believed that the condition was due to fatty degeneration of the heart, and this had been proved to be true later from the fact that

the epileptiform attacks might come on where there was no disease of the heart. Bouchard had pointed out that there was probably degeneration of the vessels of the brain and from the fact that the attacks were frequently brought on by exertion it would seem that the heart had something to do with it. The vessels were affected by the arterial changes and the weak and feeble heart has more trouble in sending blood to the centres in the medulla and in that way the epileptiform attacks would be brought on.

DR. BEHREND mentioned the case of a man of 58 years who had come to him with slight attacks of "petit mal," in which he would lose momentary consciousness, but never had a complete attack of convulsions until one day when he got a severe attack and died. This was about six months after he had been examined by a prominent physician of the city for life insurance and passed.

DR. PHILIP ROY said that one of the symptoms of arterio-sclerosis was senile epilepsy, and the same condition might occur in the old or in the young. He had had one or two cases with symptoms resembling those described, with convulsions, which began as arterio-sclerosis. He had one case in a lady 65 years of age with convulsions like those described, but he found that they were due to diabetes, and in many similar cases he thought it would be difficult to say whether the symptoms were due to arterio-sclerosis or to diabetes. He did not think that these epileptiform manifestations occurring in the course of another disease, such as diabetes, should be called senile epilepsy.

DR. S. C. BUSEY said that he had seen half a dozen cases in his life, three of them in women. One of these patients was still living. The trouble began when she was 48. She had been treated with bromides, and was to-day apparently a healthy woman at 78. During the intervals between the attacks she took small doses of the mixture, and whenever she felt an attack coming on she took a full dose. In another case the aura indicated the onset if an attack, and by taking bromide of potash in 30 grain doses three times a day the attacks were warded off.

DR. G. L. MAGRUDER said that it might be interesting to the members of the Society to know the present condition of this lady. Dr. Allen had seen her in consultation early in the spring, and during the spring and summer she had had no recurrence of any of the symptoms, but she was becoming very feeble minded, and suffered from almost complete loss of memory. Her powers of locomotion and general functions were good.

DR. ALLEN, in closing the discussion, remarked that some of the gentlemen who had spoken objected to the cases which he had mentioned being classed as epilepsy, but he wanted to call attention to the necessity of ruling out gross brain lesions. Dr. Norton had spoken of one case which he had seen which had all the characteristics of elileptiform convulsions similar to the cases he had mentioned. Dr. Norton had also criticised the case in which there was a long period of coma. It was true that epileptic patients do not usually remain a long time in coma, but he wanted to make the point that there was a difference between this form and epilepsy occurring in early life. There was no mention made of this point in any of the text books with which he was familiar. Dr. Norton had also objected to the suggestion that these attacks were caused by irritation of the cells, and considered them as due more to starvation of the cells, but Dr. Allen held that when a cell was starved it became irritated. Dr. Norton had also spoken of true Jacksonian epilepsy, but almost all cases of Jacksonian epilepsy were idiopathic and not symptomatic. If there were coma we might get localized spasm in one arm, yet he spoke of iodide of potassium being useful in Jacksonian epilepsy where there was no localized lesion. DR. CLAYTOR seemed to think there was no similarity between Stokes-Adams disease and Jacksonian epilepsy, because of the difference in the pulse rate, but there might be a pulse rate of from 80 to 90 when the attack came on, so that there would not seem to be any considerable difference between them. DR. ROY spoke of cases of diabetic epileptiform convulsions. Diabetic epilepsy had been reported by Jacobi. Dr. Busey spoke of the ininfrequency of the attacks. This was characteristic, for there were

usually not more than one or two attacks a year.

MEETING OF DECEMBER 15, 1897.

The President, DR. S. C. BUSEY, in the Chair.

DR. KOBER moved that the regular order be suspended, and that when the Society adjourned it would be sine die for 1897.

DR. J. D. MORGAN, Vice-President, was called to the chair.

"The Duties of Physicians to the Profession, and their Relation to the Medical Charities of the District of Columbia." Annual address of the President, SAMUEL C. BUSEY, M. D., LL. D.

(Annual address has already been published, and will appear in the volume of Transactions.)

MEETING OF JANUARY 12, 1898.

Dr. C. W. RICHARDSON, the Vice-President, in the Chair.

A letter from the President, Dr. S. C. BUSEY, was read, regretting his inability, on account of sickness, to be present at the meeting, and acknowledging the distinction of his re-election for the fifth consecutive term.

The following standing committees were announced:

Essays—Thomas C. Smith, Benjamin G. Pool, Mary Parsons.

Editing Committee, Permanent—W. W. Johnston, Geo. M. Kober, J. Dudley Morgan.

Microscopy—D. S. Lamb, G. N. Acker, F. P. Vale.

Directory for Nurses—S. S. Adams, H. H. Barker, T. N. McLaughlin.

Legislation—Samuel C. Busey, W. W. Johnston, G. W. Cook, John S. McLain, Geo. L. Magruder, C. H. A. Kleinschmidt, Z. T. Sowers, W. C. Woodward, Llewelyn Eliot.

Public Health—Geo. W. Johnston, J. W. Chappell, Thos. A. Claytor, E. A. Balloch, Rupert Norton, George Barrie. R. T. Holden, Health Officer, ex-officio.

Dr. Jos. Taber Johnson presented the following specimens, with the histories of the cases: (1.) Fibroid tumor of uterus. (2.) Intra-ligamentous cyst.

SARCOMA OF UTERUS—TUBO-OVARIAN ABSCESS.

Dr. J. Wesley Bovee presented specimens of sarcoma of the uterus with a tubo-ovarian abscess, and in the ovary of the same side a large "ovarian hematoma," with its history, as follows: Patient, 32 years old, had been ill with severe pain in the lower part of the abdomen. An examination revealed the perineum and cervix torn, the uterus enlarged and fixed anteriorly. Behind it, filling the pouch of Douglas and extending up into the abdomen, was a large boggy and very sensitive mass. On section a right tubo-ovarian abscess was found. In the right ovary was also a hematoma. The other tube was slightly enlarged, and the left ovary very badly cystic. The uterus being enlarged and soft, was also removed down to the internal os, with the appendages. She has made an excellent recovery.

PERITONEAL CYST, WITH UTERUS AND APPENDAGES.

Patient, 26 years old, complained of severe pain in the hypogastrium and pelvis during the past six months; she was married, and had a child eight years old. An examination showed the pelvis to be occupied principally by a mass that extended from low against the vagina up to above the crest of the ilium. The upper part of it was soft and fluctuating, while the part bulging the posterior wall of the vagina was dense, resembling a hard fibroid. A section above was made, and a peritoneal cyst presented itself at once near the incision. It was carefully separated from adhesions on nearly all sides and removed unruptured, without a ligature. Double pyosalpinx and cystic ovaries, that were unsafe to leave, were found, and as the posterior wall of the uterus was so very much injured by the enucleation, the appendages and body of it were removed. She made a good recovery.

DANGERS OF THE BARBER SHOP.

Dr. Henry Alfred Robbins read a paper on "The Dangers of the Barber Shop," and exhibited a photograph of a young married man, who had typical initial lesions of syphilis on the cheek and nose, which were undoubtedly acquired through the medium of the fingers, or instruments, or dirty towels of a barber. He quoted from published articles of Dr. Judkins of Cincinnati, Dr. Montgomery of San Francisco, Professor Horscher of Germany, and others, who had treated syphilis, where the primary lesion was acquired by the foul methods pursued in so-called respectable tonsorial establishments.

Attention was called to the fact that those who avoided barber shops were, as a rule, proud of their luxuriant hair, while the clean man who visits the barber daily is almost always bald.

Dr. Robbins gave the results of Saborand's bacteriological researches, which prove conclusively that baldness is the result of a specific micro-bacillus, and that it is contagious, and can be acquired through hair brushes which have been used by those who have dandruff. This seborrhœa is the result of the micro-bacillus, which is the constant microbian expression of the affection.

The paper also called attention to Tinea sycosis, generally known as the barber's itch, "for the reason that it is often a token of remembrance from the hands of a barber."

Warning was given as to the dangers of false hair, which sometimes is alive with the same micro-organism that is found in ring-worm.

DISCUSSION.

Dr. William C. Woodward said men would submit to more at the hands of unclean barbers than of any other class. He thought the movement towards aseptic barber shops was a step in the right direction. In Paris washing of the hands, and various other methods of cleanliness, were enforced. He had learned that an aseptic barber shop had been opened in Baltimore.

Dr. S. S. Adams said that there was such a barber shop in Harrisburg.

Dr. Howland said that there was a hotel in Boston in which all the instruments, brushes, combs, lather brushes, etc., were sterilized by the fumes of formalin. There was a small metallic case in which the instruments, etc., were placed, and the barbers themselves, washed their hands in bichloride solution, 1-1000, or formalin.

Dr. J. W. H. Lovejoy said that he had never seen many cases of skin disease that could be traced to barber shops. He realized the danger, however, and when he was obliged to submit to them, when he wanted his hair cut, he always took the precaution of washing his hair thoroughly afterwards. He had seen sycosis from barber shops.

He had attended cooks and bakers with syphilitic eruptions upon their arms, and he had no doubt that they frequently had their arms, up to the elbows, in the dough which all had afterwards eaten.

He recalled a case of syphilis in a young woman whom he believed to be perfectly virtuous and who had contracted the disease by kissing.

Another means of transmitting syphilis was by tattooing. He thought it was important that some steps should be taken to force barbers and others by whom diseases could be spread in this way, to be more careful as regards the tools they used.

Dr. Carmichael said that the danger did not come so much from the razor as from the towel. The clippers was a dangerous instrument in this respect, as it was very hard to disinfect.

Dr. D. S. Lamb said that formalin or bichloride for frequent use, as in washing the hands after every shave or hair cut was decidedly objectionable.

Meeting of January 19, 1898,

Dr. C. W. Richardson, Vice-President, in the Chair.

HYPERTROPHIC PULMONARY OSTEO-ARTHROPATHY.

Dr. E. M. Hasbrouck presented the

history, specimens and photographs of a case.

LEONTIASIS OSSEA.

Dr. D. S. Lamb showed a skull, the lower jaw of which was absent; also photographs which included the lower jaw.

The skull and face bones were much thickened; in the frontal region, one and a fourth inch thick; the overgrowth affecting mainly the diploë. The skull was light and brittle. The lower jaw was little if it all affected.

This skull was obtained from the body of a mulatto woman in a Baltimore dissecting room, and was presented to the Army Medical Museum.

The case is interesting in a diagnostic way. The skull was by some thought to indicate *leprosy;* there is a leprous leontiasis, but, as I understand, it affects the soft tissues of the face only, and not the bones. The skull was also thought to indicate *syphilis*, but I can see no evidence of syphilis. It has been diagnosticated *osteitis deformans;* but the fact that the face bones are not affected, and the long bones of the skeleton also are not, would seem to exclude osteitis deformans. It has also been considered a case of *acromegaly;* but here, again, the absence of any affection of the hands or feet, and the fact that the lower jaw is not affected, seem to exclude acromegaly. So I have ventured to call it *Leontiasis ossea*, a name given by Virchow. I would refer, in this connection, to a thesis by F. Baumgarten on the subject; Paris, 1892. He seems to have investigated it more thoroughly than anybody else. He collected and analyzed the cases on record. In his resumé he says that the disease is a diffused hyperostosis, which may be limited to the skull, or involve other bones of the skeleton; that in extreme cases the head may weigh eight times its usual weight. The hyperostosis involves both tables and the diploë, causes much deformity of the external surface, and much internal disturbance by pressure on the brain and cranial nerves and vessels. Its duration may be anywhere up to 30 years.

I would also invite attention to a case reported by M. Allen Starr in 1894. He calls it *megalo-cephalie.*

Meeting of January 26, 1898.

The President, Dr. S. C. Busey, in the Chair.

Dr. Balloch presented the following histories with specimens.

I. EPITHELIOMA OF PENIS.—AMPUTATION.

A. C. S.; age 39 years. In 1890 had a sore on glans penis and was given specific treatment. Was circumcised at this time.

In March, 1897, noticed a small pimple on glans penis which gradually broke down into an ulcer on right side of penis. No glandular enlargement. No skin eruptions or other signs of active syphilis.

Patient put on specific treatment, which was faithfully pushed for a month or more, the sore being dressed with various powders and lotions. The sore gradually became fungoid and occasionally bled.

In November he came under my care. The disease being evidently cancerous, operation was proposed and accepted.

Operation Nov. 11. Removal of penis scrotum, testicles and ingunial glands.

Penis removed back to pubic bones. Attempt to bring urethra into perineum unsuccessful. The recovery was uneventful.

Examination of the penis by Dr. Walter Reed showed it to be mainly an epithelioma with outlying growths of papilloma probably of syphilitic origin.

II. STRANGULATED UMBILICAL HERNIA.

The patient, a woman 50 years, had had an umbilical hernia for 12 years, ir-

reducible for 5 years. Symptoms of strangulation appeared and an operation was performed, The sac contained inflamed omentum. The gut was gangrenous and ruptured. The gangrenous part was excised, the proximal end sewed to the skin and the distal end turned in, whipped over and dropped in the abdomen. The operation lasted 30 minutes. The patient died a few moments after its conclusion.

A CASE OF TYPHOID FEVER, COMPLICATED BY LARYNGEAL DIPTHERIA AND BRONCHO-PNEUMONIA.

By Dr. Samuel S. Adams.

D. H., colored, female, aged 9 years, residence 1200 Q street, was admitted to the Children's Hospital December 22, 1897. She has been ill for the past three weeks. After examination a diagnosis of typhoid fever was made.

The urine being normal an immunizing dose of 250 units of the antitoxin of diphtheria was given hypodermically. The urine was subsequently examined and found to be normal. The temperature ranged between 104 and 105 Fahr. and delirium was almost constant.

For the first few days cold spongings were given, but as they had no perceptible effect upon either the temperature or the delirium tub baths at 90 Fahr. were ordered whenever the rectal temperature registered above 103½ F. From four to six tubs were given daily, which controlled the high temperature and stopped the delirium. The case ran the usual course of typhoid fever and was doing well on the tenth day after admission.

Jan. 3rd, twelfth day, there is no change in the temperature and she becomes very nervous after the baths. Has had three involuntary stools to-day. Has been drowsy during day. Frequent cough attended with slight pain and hoarseness.

Jan. 4th and 5th. Hoarseness has increased; respirations slightly increased in frequency and attended by retraction of lower ribs during inspiration. No membrane visible in pharynx, but pulmonary sounds somewhat exagerated. On the latter day she seemed much brighter.

Jan. 6th. Her breathing is better and as the tubs have been discontinued she is more quiet. Steam inhalations were instituted but they caused her to become so excited that they were suspended. Hot fomentations were applied over the larynx and she was placed under the tent for continuous inhalation of steam.

Jan. 7th. Respirations very much increased in frequency and attended with cyanosis. Marked retraction of lower ribs and supra-sternal region. Stupor marked. No membrane in pharynx. Physical examination revealed extensive broncho-pneumonia posteriorly, with superficial breathing.

As the breathing became so much embarrassed during the day it was deemed advisable to intubate at 7.30 p. m. Marked relief followed the introduction of the tube, but she died suddenly about a half.hour afterwards.

Necropsy by Dr. D. S. Lamb about 14 hours after death. Pharynx darkly congested. Larynx and trachea coated with false membrane. Lungs: upper lobes somewhat œdematous: lower lobes largely in condition of red hepatization, with whitish fluid in bronchi (broncho-pneumonia;) recent pleurisy right lung. Spleen large and soft with patches of hemorrhage.

Stomach and intestines appeared to be normal except as follows: lower foot of ileum showed extensive ulceration of Peyer's patches and some enlargement of solitary follicles; one large ulcer in vermiform appendix; a small ulcer in cæcum. Glands in ileocolic region enlarged and reddened. Kidneys large and cloudy.

There are several interesting features in this case which are worthy of note.

1. Although she had been given an immunizing dose of 250 units of the antitoxin of diphtheria on December 23rd, neverthless layrngeal diphtheria set in eleven days thereafter.

2. As we not infrequently see acute larygitis in typhoid fever, we did not suspect diphtheria, although frequent examinations of the nose and pharynx were made.

3. When the embarrassed respiration recurred and pneumonic symptoms became manifest we suspected diphtheria but had no evidence of it save in the difficult breathing.

4. Intubation was performed more for euthanasia than with any hope of saving life.

THE MILITARY SURGEON

A SUPPLEMENT TO THE

NATIONAL MEDICAL REVIEW

UNDER THE CHARGE OF

COLONEL WILLIAM H. FORWOOD,

Assistant Surgeon-General, United States Army.

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Original Articles.

FIELD SERVICE.

By GEO. W. ADAIR, Surgeon U. S. Army.

Are you ready for war? Of course the doctor is the very high priest of emergencies. It would be unprofessional to be otherwise than ready. It is rude to ask him such a question. And yet, the change from the daily routine of life in garrison to the field work of actual war will be great. That from duty in the armory and summer encampment will be greater. To lay down private civil practice and take charge of a command in the field is to face a whole series of new problems. The case will justify a few questions.

In civil life the doctor minds his own business fairly well. As soon as he dons the uniform he will be required to put his finger in every pie. From the time that diplomatic relations are severed until the army is mustered out after peace is declared, no military problem will be solved without the consideration of some medical factor. Have we sufficiently meditated upon the put-yourself-in-his-place principle to be able to so tactfully insert our fingers in the various pies as to give no offense, and surely attain our intended useful purpose? Advice as well as pills can be rendered palatable. Suggestive therapeutics have a place in military relations. A casual remark on the ease with which a camp might be drained or other sanitary defect remedied will frequently secure the required action—the commanding officer adopting the idea as his own—while he may resent a written communication which puts on the official records the same disorder in his camp. The doctor must seek fame from vital statistics to be summed up after the war. He will not seek to record his own merits, and will never write a letter when his aim can be better accomplished without it.

It would be a mistake to suppose that "red tape" will be cut by war. It will be given a brighter tint and tightened. Regulations, orders and blank forms must be conned. They are the result of long experience, and all mean something. That meaning must be mastered. Twenty years hence the record that you jot down to-day may give just dues to children yet unborn. The medical records of our civil war, made under conditions of excitement and fatigue, are a marvel of accuracy and completeness. Millions of dollars have been paid on the evidence which they have furnished—without affidavit or seal of court—a doctor's signa-

ture is enough. When we report an injury as not contracted in the line of duty, the facts on which we base our opinion will be carefully noted. It is due to the country and to the man.

Has your command been examined physically? It is the ambulance-wagon which is empty in the morning that will be of use to the marching command. This is true at the outset of your journey. You need not carry invalids along to keep you in practice; the strong men will furnish you with enough professional work. For use at the physical examination there is an outline figure-card, on which is to be noted scars, moles and other personal marks. This system has been used to identify deserters. Your men are all patriots, and well known to each other. This record may seem unnecessary; the men may resent it as an insulting suggestion. If properly recorded on a card a mole or scar upon a limb fished from Havana harbor would have had a deep significance to many mourners. War has its horrors. To provide against unpleasant possibilities is what doctors are for. We will perform this duty with faithful zeal.

Is your command properly vaccinated? The writer recently re-vaccinated his command, and in the first thirty-five men he had eight primary vaccinations; and this in the regular army, whose regulations are explicit. With this experience he will answer the question for you: No, your command needs re-vaccination, and the time to do it is now. You will have a fair percentage of sore arms, and the time lost will be felt less now than later. Then, the chances for unpleasant ulceration and sloughing will be much greater when the men are concentrated in masses. At home the national gnardsman is master of his own person, and free to do as he pleases about this matter, but at the outbreak of hostilities he has no right to endanger the command. During the Franco-Prussian war there was smallpox in the French villages, and the French army suffered severely. The German army, in which re-vaccination had been done, passed through the same villages unscathed. If in social intercourse you casually mention that high military authorities practice re-vaccination as a preliminary to a campaign, company commanders will ask you to vaccinate their men, as a favor, and will not regard you as a tyrant, against whose aggressions, in the guise of science, it is their duty to protect their men. This is a purely military matter; a few cases of smallpox will give spicy variety to the monotony of camp life, and the doctor a certain importance.

Have your men proper shoes? This is another purely military matter, that will be the better for a professional touch. You have no personal interest in the matter; you do not buy the shoes, and sore feet are minor ailments which the steward can dress by dozens after he gets into camp. It will divert his attention, and keep him from feeling tired; will give him a certain manual dexterity, and possibly an appetite for his supper. But the shoe is the very foundation—a most important part—of army transportation, and will be a subject of frequent discussion. You can keep in touch with the engineers by pointing out that the prolonged axis of the great toe should pass through the center of the heel; that the great toe is a long lever, and that slight pressure at its tip, when long continued, will produce mischievous deformity, and, by encroaching upon the territory of the smaller toes, cause numerous blisters and corns. When a man is seen whose shoe is stretched or cut to make a pocket for his bunion, point out that the bunion is a laudable effort of nature to push the foot outward and relieve the pressure at

the tip of the great toe; that what is needed is a great pocket on the outer side of the shoe. By such instruction, long continued, will be made a public opinion before which purchasing quartermasters and contractors must finally bow.

Instruction in First Aid must begin early and begin at the feet. The men must be taught that friction and moisture will cause blisters in any shoe; that the shoe with pointed toe by crowding the toes together increases friction and checks evaporation; that leather, water-soaked from without, will not take up the perspiration within; that the various foot-powders can only act to the limit of their hygroscopic power. With such instruction the men will soon appreciate the advantage of having accessible a perfectly dry pair of socks to be put on at the first halt after the soles of the feet begin to stick to the socks. They will also learn that the hygroscopic power of the sock is at its best when the sock is absolutely clean.

When you go into camp, the first thing to receive attention is tentage. That which the medical department receives must be carefully and plainly marked to avoid disadvantageous exchanges when it is mixed with that of others for transportation. There will also be the poles, pins, ropes, and the tools that will be required for pitching, an ax, a wooden mallet, and a spade. The tools must hereafter be kept with the tents. A box of surplus pins is necessary to provide for breakage and loss. Fifty feet of small rope, some strong twine, and some flexible wire will be found convenient in many ways. Pitch all your tents as soon as received, using only the tools that are to be with them hereafter. Missing things will so be discovered and can be supplied, saving future annoyance. Careful instruction in tent-pitching must be given to all the men of the hospital corps. They will always be few in number, and hospital tents are heavy. System and skill must compensate for lack of strength. There will be much hospital work to be done after the day's march, and celerity is essential. But all must be neatly and properly done. More time will be consumed in correcting errors than is required to do things right at first. In the first camp, have the tents pitched in the order, and things within given the places which they are to occupy ever afterward, as much time is lost in stopping to consider, and in searching for things in strange places.

Has each man his piece of shelter tent and the pole? Be sure that each hospital corps man has one. At summer encampments, in the luxury of large tents, you may have learned to despise this humble shelter, referred to contemptuously as a dog tent; you will learn its usefulness in an actual campaign. Even where wagon transportation is plentiful, trains will be delayed and the men will be spared many hours of discomfort if each carries on his person the means of shelter from sun and rain. Many short halts will be made, when the men can be spared the fatigue incident to pitching the heavier tents. As the campaign advances, military manœuvers will not be hampered by slow wagon trains. On the battle field a wounded man may lie for many hours before he can be carried away; if at hand, some one who can do no more, may pitch a shelter tent over him to protect him from the elements. Sometimes the transportation may just suffice to get the dressings forward, when the wounded can be made quite comfortable under shelter tents. The soldier's shelter tent will contribute to his welfare in many ways; when not needed as a shelter it will cover the straw of his bed; in it his clothing can be securely rolled; it may serve as a litter to bear him wounded

from the field. A field hospital composed of shelter tents is quite feasible. The tent can be quickly laid aside and replaced as the service may require. The wounded can rest under them on litters ready for transportation; and crowding can more readily be avoided.

A professional question may be considered. Aseptic surgery has not yet gained many laurels on the battlefield. During our civil war, the American surgeon taught the world much military surgery. The world awaits another lesson. It looks to the American surgeon to be shown how to carry aseptic surgery into the field and approximate the results of civil practice. Are we ready to do this? Is each of us ready to do his share towards the attainment of such results? Will we reduce the percentage of suppurating wounds near to that of civil hospitals? Can we improvise appliances in the field that shall take the place of those in the modern operating room?

Soap and hot water must be the field operator's chief resources. Antiseptics may find a place in his dressings; but bichloride of mercury will be tabooed as an enemy to the eyes and points of needles and of all cutting edges, for in the field it will be difficult to replace or repair injured instruments. Boiling water is a sterilizer of undoubted power, of extensive application, and is always at hand. In the place of the operating-table with its top of glass, or of enameled metal, the hand litter raised to proper height must serve for many operations. Can we isolate our field of operation from the surrounding dangers? We may learn something by looking at the rubber dam with which the dentist isolates his field of operation. It grasps the tooth at its neck and shuts it off from its fellows, and from the cavity of the mouth. A sheet of rubber-cloth of suitable length and breadth can be drawn from boiling water, cooled for a moment, and passed under the injured limb. Two inches of its upper end can be folded down, made to grasp the limb closely near the trunk, and be secured by a safety pin. With the lower part of the cloth spread over adjacent members and the litter, our field of operation will be more isolated than the dentist's with his rubber dam; and by slightly lowering the foot of the litter, our rubber-cloth will take the place of a Kelly pad. No blood will reach the litter and when the operation is over and the dressings applied, the cloth can be removed and the patient carried to his place in the field hospital on the same litter, on which he can rest, ready for transportation to the rear. Other pieces of rubber-cloth, sterilized in boiling water, may well take the place of bichloride towels. With several such strips of rubber cloth, attendants can prepare other limbs for operation in advance. With due regard to the surgical cleanliness of himself and his attendants, if all are imbued with the spirit of aseptic surgery, it would seem that the operator in the field should not be so far behind his civil confrère.

With amputations it cannot make much difference, but for successful conservative surgery, the cases must reach the field hospital uninfected. Every soldier must know the importance of protecting open wounds from dust and other contaminations. This is the part of First Aid where careful instruction will save the most lives. Those, without otherwise fatal wounds, who perish on the field from hemorrhage, will be few; the victims of pyogenic and other destructive germs will be many.

Selections.

Rubber Gloves in Operative Surgery.

Dr. Charles McBurney, in a paper read before the New York Surgical Society, March 9, 1898, says that during the past few years the conviction has constantly become deeper and more widely spread among surgeons, that wound infection is usually produced through the agency of the palpable objects that come in direct contact with the fresh wound. Acting upon this conviction, we insist that the field of operation be surgically clean, and that every object likely to be brought in contact with the wound—the hands of the operator and those of his assistants, as well as every individual item of the surgical armamentarium—shall be sterile at the beginning, and be kept sterile until the end of the operation. It is best to discard all unimportant and irrelevant minutiæ, and to concentrate one's attention (an intelligent attention) upon those details which actually determine the invasion or exclusion of wound infection. The author regards heat as the most reliable of all disinfectants, and thinks that operation wounds are rarely infected at the first change of dressings, or through the agency of floors, walls, floating dust, spectators, or distant objects in general. He observes that the objects that come in direct contact with wounds can be rendered perfectly sterile and non-irritating, and that the usual source of infection is to be sought either in the skin of the patient or in the hands of those directly concerned in the operation. But many times operative interference is undertaken in emergency cases without previous prolonged preparation of the patient's skin, and in all operations the skin edges of the wound made by the surgeon suffer much injury, and yet, in spite of these and other provocations, many continuous series of perfect results are attainable. It is very probable, therefore, that the patient's skin is comparatively seldom the origin of infection in operative wounds. The importance of the hands of the operator or assistants as the active factor in determining infection is suggested by the constant discussion as to the best methods of sterilizing them, and the wide divergence of opinion in regard thereto, and is proven by bacteriological tests of the hands; but even if the hands are made on the surface bacteriologically sterile before the operation, it is questionable if they remain so until the end; and, considering the number of hands that take part in any extensive operation, the problem of making and keeping them all sterile is appalling. Indeed, Dr. McBurney believes that it is impossible to render the hands perfectly sterile, and this is largely because we cannot use the most efficient sterilizing agent—wet heat. But if we cannot boil the hands we can cover them with something that has been boiled. Reasoning thus, the author looked carefully into the use of rubber gloves, and in April last began to employ them constantly and systematically both for himself and his chief assistant. But while it was found that wound healing since that time was, in the main, remarkably perfect, there were some cases where the results, though not serious, were by no means all that could have been desired. He, therefore, since October has had all of his assistants wear gloves at every operation of every kind, and has carefully followed the outcome of a large number and variety of operations, sufficient to test the value of the rubber glove in the avoidance of sepsis and its effect upon the sensitiveness of the fingers in palpation. Except for the wearing of these gloves in the manner indicated (the hands having been previously washed merely with soap and water), there has been no change in operative technique from that regularly followed. The results obtained in wound healing have been remarkable. Practically, without exception, there were no reddened wound edges, no œdematous tissue, and no delayed union or unhealthy discharge. In a number of cases already infected the wounds were, after the use of the knife and currette, closed as are those newly made, and all healed primarily. Using the highest clinical standard as the test, the author avers he has never seen such uniformly perfect wound healing. While not denying that others, operating with

bare hands, may attain equally good results, he says that no change in his own methods has been so eminently satisfactory to him. One of the advantages of rubber gloves enumerated by the writer is that they can be boiled, and when the operation begins be rendered absolutely sterile. This has been proven by the severest bacteriological tests. Further, since they are non-absorbent, they must remain sterile if they come in contact with no source of infection. They may be washed off with a sterile solution as often as desired during the operation. Even if the hands of the operator and his assistants happen to be infected the wound is protected from them by non-absorbing, impervious, sterile gloves. Dr. McBurney merely washes the hands previously with soap and water, while Dr. Halsted, of the Johns Hopkins Hospital, writing to the former, says that at that institution the gloves are first boiled and are dropped from the boiled water into corrosive sublimate solution (1-1000), filled with this solution and pulled, while full, on hands as carefully disinfected as if no gloves were to be worn. Moreover, the operator himself, Dr. McBurney continues, is protected against infection in the most septic cases, and his hands do not suffer from prolonged immersion in solutions, etc. When first used it is a little difficult to manipulate some instruments rapidly, thread needles, etc., and there is some risk of tearing or pricking the gloves, but in a short time one becomes accustomed to them and the tactile sense is in no way interfered with. A very feeble pulse, differences in the consistency of tissues and the various irregularities of surface can be easily felt and appreciated through a well-fitting glove. A piece of sterile gauze enables the operator to manage a slippery loop of intestine or protect the glove from injury when ligating large pedicles. Should a glove finger be pricked, another may be drawn over it. The gloves are cheap and durable. To prepare them for use they are washed with soap and hot water to which a little ammonia has been added. They are then washed a second time in fresh ammonia water, lightly packed with gauze, wrapped in a towel and boiled for 15 minutes in a 1 per cent. solution of sodium carbonate. The enveloping towel is to be removed only by the operator or assistant at the moment when the gloves are to be drawn on. The hands of all those directly concerned in the operation are washed with soap and water and dried, the interior of the gloves is dusted with sterile starch powder and the gloves (a fresh pair for every operation) are drawn on. They may be washed or exchanged for a fresh pair at any stage of the operation. Finally, the gloves may be made long enough to cover the forearms. The author, in closing, suggests that all surgeons who are not entirely satisfied with their results, give these gloves a fair trial, that their value as a defence against wound infection be adequately measured. McBurney (C.), rubber gloves in operative surgery. Annals of Surgery, Phila., 1898.

If the hands are moistened with glycerine, lubri-chondrin or even soap, the gloves can be readily put on. Oily materials are destructive to Rubber.

Medical Chests on Shipboard.

Audibert describes some tests, made on the French cruiser *Chasseloup-Laubat*, of medical chests designed by Rouvier, Director of the Sanitary Service. These chests were of two kinds, each kind having two varieties:

1. Medical Chest (marked M),
   A. Complete chest,
   B. Reserve chest.
2. Chest for Dressings (marked P),
   A. Complete chest,
   B. Reserve chest.

The large model, A, is nearly the same for the two kinds. It is made of pine and is 83cm long, 52cm high and 45cm wide. It contains three drawers divided into many compartments. Its weight, when all material is in place, is 76.5kg for the chest containing medicines, and 75kg for that containing dressings. It is provided with two strong handles at the ends whereby it may be lifted and carried. The smaller model, B, is similar to the larger chest except that it is not so high, has but one drawer, and weighs, when full, 58kg for the variety containing medicines and 55kg for that provided with dressings. Six of these boxes were delivered on board the cruiser, 3 of kind 1, for medicines, and 3 of kind 2, for dressings.

1st. Kind, for Medicines:

A. One complete chest, containing utensils and apparatus (articles not consumable) for the preparation and exhibition of medicines and drugs, and medicines proper (consumable articles).

B. Two of the smaller reserve chests containing an extra supply of articles likely to be used up, namely: Drugs and medicines.

2nd. Kind, for Dressings:

A. One large complete chest containing articles for the preparation and application of dressings (objects not consumable), and dressings, etc., the supply of which was likely to become exhausted.

B. Two small chests containing a reserve of the latter.

The main question to be determined by these experiments was whether these boxes and their contents could replace the permanent pharmacy on board ship. It was found on the *Chasseloup-Laubat* that they did so admirably. Ships are built so differently that no two pharmacies are alike, and boxes, bottles and other containers will often not fit into places in which it is intended to stow them. Every incumbent, therefore, arranges his pharmacy to suit himself, and his successor may have great difficulty in finding what he wants. Moreover, the location of the pharmacy is often such that, by reason of nearby heat or moisture, drugs deteriorate. With the chests described above, however, every ship would be alike, there would be no difficulty in an emergency of immediately finding what was wanted, and the boxes could be easily moved from one part of the ship to another and the pharmacy established anywhere. In the event of a severe accident upon a merchant vessel at sea, a chest complete in every detail could be immediately carried thereto from the man-of-war, while to collect and transport all the necessaries to treat, perhaps, a large number and variety of injuries, would lead to confusion and require much time and trouble. The same disadvantage of the old system and advantage of the new would obtain in the case of landing parties in time of war. Here, chests could be easily landed with the troops, and posts of succor immediately established complete in every detail. Under such circumstances the chances of loss, breakage, injury and deterioration in medical and surgical supplies would be reduced to a minimum, and *the* important thing would not be forgotten and left behind. Since these chests and their contents would be identical for all ships, one or more which had become exhausted, could be replaced by complete chests at any naval depot, without the necessity of making complicated requisitions, and transporting from shore to shipboard numberless loose packages, many of them fragile. On the *Chasseloup-Laubat*, with a complement of 300 men, it was found that six boxes lasted two months, but for larger vessels the number of chests could be increased in proportion to the effective, and the same could be done on vessels sent on long cruises. It has been said that all chests should be identical, and this is true of the chests themselves and of the size, and shape of the bottles, boxes and packages to be placed therein. But some modification in the nature of the medicinal agents must be provided for where vessels are intended for service in climates in which certain diseases are especially prevalent. The author likewise suggests that the chests be made somewhat lighter in weight. Audibert (A.) Coffres à médicaments. (Rap. Abstr.) Arch. de méd. nav., Par., 1897, lxviii, 176.

The Rifle Bullet of the Future.--Nimier.

The modern rifle bullet, though humane, is in other respects unsatisfactory. A missile of this character should be sufficiently effective to at once put a permanent stop to the fighting capacity of the person wounded and render him *hors de combat*. In the Dahomey expedition it was noticed on many occasions that savages, even after being struck in the chest at short range by a Lebel bullet (caliber 8mm, weight 15gm), continued to fight, and the lack of stopping power of the Lee-Metford rifles used by the English in the Chitral campaign, (bullet 7.7mm caliber, 13.9gm weight), led the hill men to call them children's guns. Thus far attention has been chiefly directed to the

caliber of bullets, the importance of which, it is true, excels that of length and composition. For length cannot exceed certain limits, and the loss in weight by reduction in caliber cannot be made up by proportionately lengthening the projectile. Moreover, the composition of small missiles is not capable of much variation, and lead appears to remain the metal of choice. Bullets that suffer no change have been substituted for those whose shape is altered upon impact. The surface struck by a ball of 5mm caliber will be a circle, at right angles to the long axis of the projectile, of 5mm diameter. When the bullet is of 8mm caliber, this circle will be 8mm in diameter. After a flight of 1500m the Lebel ball has a striking energy of 30 kgm, or 10kgm less than the German missile, while a bullet of 5mm caliber possesses only 26kgm under similar conditions. Yet the last has more penetrating power than the first; for if we compare the striking energy and the diameter of the projectile, we find that at 1500m the coefficient of penetration is for the 8mm bullet 0.59kgm and for the 5mm 1.32kgm. The ball of 5mm has, therefore, a better chance of traversing the object struck, than the bullet of 8mm —since it loses less of its penetrating energy. To increase the striking energy of the 5mm to that possessed by the 8mm bullet, its velocity would have to be augmented, and this would result also in an increase of its coefficient of penetration and penetrating power. But an excessively high velocity would have to be attained to compensate for its small area of impact. Hence, it follows that, in adopting a bullet of small caliber, it must be made to spread, when encountering resistence, to become effective. No reliable reports have reached the author of the effects observed in India with the new "Dum-Dum" bullet. As a rule, however, bullets of that character do not spread except upon striking compact, bony tissues, and the injuries produced, owing to their small caliber, are insignificant lesions of the soft parts unless vital organs are injured. The author's experiments with the modified Lebel bullet showed that it became deformed only when it came in contact with the diaphyses of bones; in other tissues it produced the same injuries as the regular mantled bullet. A ball of 5mm caliber, if made deformable, so far as one is able to predict, would cause injuries sufficiently severe to render a wounded soldier incapable of further activity. It would be a humane missile, as the word is understood, causing wounds of limited gravity in the soft parts, and, by reason of its extremely small caliber, lessening the chances of wound infection; while its diminished weight (when carried in the numbers requsite to supply the modern weapon) would be of advantage to the soldier. Nimier (H.) Les projectiles du prochain fusil de guerre. Rev. gén. de clin. et de thérap., Par., 1898, xii, 55.

The Exhibit of the Hungarian Red Cross at Budapest.--Le Fort.

The Hungarian Red Cross exhibit consisted of a temporary field hospital, which in construction suggested the Dœcker pavilion, and contained certain furnishings, apparatus and appliances designed by Dr. de Farkas. The pavilion was built of a number of spruce boards or panels 1.25 m square, and could be easily taken apart, transported and put together again. The size of one of these panels was calculated to conform to the width of two beds, including the space between them, and this being the unit, the number of panels necessary for the construction of a hospital of any size, could be easily arrived at. The height of the hospital constituting the exhibit was that of two panels, or 2.50 m., the floor being formed of 5 and the roof of 6, 15 panels altogether being necessary to enclose space enough for 2 beds. By simply adding panels, the size of a pavilion could be increased indefinitely, 150 panels being adequate for 20 beds, etc. Each bed had beside it one light iron table and one chair of the same metal. As part of the equipment of the pavilion was a wooden box, 1 m long, 0.55 m wide and 0.77 m high. This box was employed to transport the dressings, instruments and appliances used in field hospital service. When taken apart, the top and bottom of the box formed two four-legged tables, which, placed together, made an excellent operating table 2 m long, and of the same width and height as the chest. The sides of the box were detachable and pro-

vided with folding legs, thus making yet other tables upon which to place basins, trays, etc. Among the many useful articles which this chest contained were a number of very simple instruments, including an electrical apparatus for detecting the presence of bullets, cheap and easily made. It consisted essentially of a rude galvanometer (made of a compass), two lengths of wire, a piece of zinc, a copper coin, a piece of flannel and two probes. There was also a forceps, consisting of grooved and toothed blades and long handles, especially designed by de Farkas for grasping and extracting the modern cylindro-conical ball, and a delicate endoscope, to be used in searching for bullets and in tamponning narrow and deep canals and cavities. Dressings were provided, put up in five different packages, each one of which contained the articles necessary and best suited to the protection of injuries of certain locations Thus, one package contained dressings for wounds of the head, neck, hands and feet; another for injuries of the knees, legs, forearms, etc., etc. Upon each packet was marked the kind and situation of the wound in the dressing of which its contents were to be employed. By this system it is hoped to save time and material. The silk ligatures and sutures, after having been sterilized with nitrate of silver, which is said to make them stronger and to preserve them for three years at least, were kept in alcohol ready for use. Le Fort (R). La chirurgie de guerre à l'exposition de la Croix-Rouge à Budapest. Arch. prov. de chir., Par., 1898, vii, 41.

The Sanitary Condition of the Austro-Hungarian Army during the year 1896.

In 1896 the total morbidity was 735.7 p. m. of the average strength, compared to 790.1 in 1895 and 832.9 in 1894; 343.0 p. m. entered hospital, against 350.3 in 1895 and 347.6 in 1894. The morbidity in 1896 was highest in January with 77.8 p. m., and lowest in September, with 39.1 p. m. As in the two previous years, admissions to hospital were most common from among the fort artillery, 451.0 p. m., and least common from the technical artillery, 195.8. There was an average loss per man (of the 290,468 strength) of 13.3 sick days, against 13.8 in 1895 and 14.2 in 1894. Of these sick days, 3.6 were spent with the troops and 9.7 in hospital. The daily average sick list in 1896 was 10,566 men, or 36.3 p. m., of which number 9.9 p. m. were with the troops and 26.4 were in hospital. The average duration of treatment was 17.3 days, compared to 16.8 in 1895 and 16.5 in 1894. In 1896, 1004 men died as a result of disease, or 3.46 p. m., as against 3.67 in 1895. There has been a steady decline in mortality since 1882. Diseases of the skin were most frequent, 189.6 p. m. Then came those of the gastro-intestinal system, 117.8; next, diseases of the respiratory organs, 95.9 p. m., and next chronic infectious diseases, with 92.0 p. m. The largest number of deaths were caused by ileo-typhus, 0.59 p. m.; next in order came croupous lung inflammations, with 0.51 p. m. There were 314 suicides, 1.08 p. m., 63 attempts at suicide and 18 cases of self-mutilation. Statistik der Sanitätsverhältnisse der Mannschaft des k. u. k. Heeres im Jahre 1896, etc. Deutsche mil.-ärztl. Zeitschr., Berl., 1898, xxvii, 130.

Sanitary Service in Battle, Etc.--Nicolai.

On approaching the enemy, the regimental surgeons should make careful note of the ground gone over, in order to be prepared to select the best locations for the establishment of dressing stations in case it comes to battle. Until the conflict actually begins, and it is clear in what direction it is going to develop, no dressing stations are, however, actually instituted. The bearers assemble at the hospital wagons, and, superintended by an assistant surgeon, place their own equipment on the wagons and take their dressing cases therefrom. Upon consultation of the senior medical officers of the battalion, regiment and brigade, and of the regimental commander, the exact location of the dressing stations is decided, but nothing is unpacked until the battle assumes a distinct form, the line of advance and of possible retreat become apparent, and the direction of fire and the available cover are considered. The dressing station, once established, does not require to be moved unless the distance from it to the line of battle becomes too great for the bearers to traverse, or

the station comes under fire, or, finally, the troops retreat. Under the first two conditions there is usually an abundance of time for the chief sanitary officer to select a new site for the station. But a retreat, if it occur, takes place suddenly, and in locating and conducting a dressing station surgeons should always have this eventuality in mind. To facilitate rapid evacuation, as well as not to encumber the sanitary officers during battle, the slightly wounded should be immediately sent to the rear, and those who are not able to walk must be put in condition as soon as possible to stand transportation to the principal dressing station, field hospital, or some fixed point where they may receive proper care. For this purpose a number of vehicles should be kept close at hand. Surgeons in charge of advanced dressing stations should keep in mind that only those must be treated who require immediate attention; for the medical officers at these points must be free to meet and grapple with unexpected emergencies. The choice of the site for the principal dressing station is gone about in much the same way. The Division Surgeon informs himself of the probable line of action and of the topography of the country; while, acting under his direction, the Commander of the Sanitary Detachment and his subordinates select the exact site of the station, and make arrangements for the sanitary wagons and ambulances, for the erection of tents, and for cooking. Nothing is actually unpacked, however, until the conflict begins, as there will be plenty of time thereafter to prepare for even the most complicated operation. The possibility of a forward or backward movement should again be remembered, and every one should know his duties and be able to perform them rapidly and systematically in case a sudden move is necessary. In choosing a position for a dressing station, it is advisable to recall the three zones of battle described by Bircher: 1. The marching zone—to within about 1500 m of the enemy; 2. From that point to the main firing position, or to within 500–600 m of the opposing force; and 3. The zone of decisive conflict (Entscheidungszone). While gun-shot injuries may occcur in all three zones, at first the greatest losses will take place while the troops are deploying, or in the zone of development; and both they, who wish to approach in safety as near as possible to the enemy, and the sanitary officers, who desire shelter for the wounded, will utilize all available cover. The flat trajectory of the modern missile has the advantage that, at short range, a relatively slight elevation will afford protection. A bullet, shot from a distance of 2,050m, if it pass over an elevation of 83 m, will not reach its mark until it has traversed 1200 m behind it; and a greater elevation than this cannot be shot over if aim is taken along the line of vision. An obstacle 77 m high affords protection to a space of 2000 m behind it; one 32 m in height, at a distance of 900 m from the enemy, shelters 1450 m, and an elevation of 10 m, if the enemy be distant less than 1000 m, protects a distance of from 600–1000 m in its rear. These facts are of the greatest moment in the choice of a location for a dressing station, which must be near enough to the firing line to afford aid to the wounded, and yet occupy a position where those already injured may be sheltered. From what has gone before, the importance of adequate cover will be readily seen, and it will also be clear that withdrawal in a straight direction from the firing line is not the way to secure necessary protection. In fact, the site chosen should be behind cover within the area of the danger; which position may, however, become untenable in the event of the retreat of the enemy, and necessitate an advance of the dressing station, as was exemplified in the case of the Sanitary Detachment No. 2, Eighth Army Corps, at Spicheren. Finally, the question arises, how can those who fall wounded in the fighting line be most efficiently succored. The War Sanitary Regulations provide that one-half of the regimental surgeons and hospital assistants remain at the dressing station, while the other half accompany the troops into action. It is maintained by some that a surgeon, if in the line of battle, can save many lives by promptness, and that the moral effect of his presence is of great service to soldiers in danger. The author is of opinion however, that the four bearers of a company, if properly trained, can render, on

the few occasions when immediate aid is needed, far more assistance than one surgeon, however skillful and cool he may be, and that the latter can do much more good at the dressing station than with the troops. One point upon which the author lays particular stress is that it is never wise to select buildings of any kind for dressing stations, on account of their liability to catch on fire. Many instances of this lamentable accident, where it was impossible to remove the wounded, have been recorded, one in the war of 1870–71. It is far better to select positions, not *in* buildings, but *behind* them, since these can be the more readily evacuated. Nicolai (H. F.). Der Sanitätsdienst im Gefecht und der kriegsmässige Uebung desselben im Frieden. Deutsche mil.-ärztl. Zeitschr., Berl., 1897, xxvi, 377.

Sanitary Service of the First Line.

Delorme (Médicin-Principal de 1st. Classe de l'Armee) was director of the maneuvres of the sanitary service which took place in October at Chalons. At the close of the maneuvres he held a conference, and, in response to the request of those present, he subsequently committed to writing the remarks he made upon that occasion. The Sanitary Service of the first line, he says, is composed of three branches, the post of first aid, the ambulance and the field hospital. The post of first aid is the first link in the chain. When the troops fall into line of battle, the medical officers, the sanitary wagons, the regimental bearers and musicians form a column which seeks a sheltered position and establishes the advanced dressing station. Protection must be looked for behind a hill or other natural object, and houses, which are simply targets for artillery must be avoided. If the troops continue their movement no dressing station is instituted, but the wounded are grouped along roads and are collected and removed by ambulance wagons. Posts of first aid should be located as close as possible behind the regimental reserves and be sheltered from rifle fire. To this point come the wounded who are able to walk, guided by bearers or the hospital flags, and also those who fall where shot and are brought in on litters. The location of this first dressing station is advanced, should the troops advance, the wounded being transferred to the ambulance, the next link in the chain. In the event of retreat, the dressing station is likewise withdrawn, the very severely injured being left under the care of a sanitary officer. The bearers, before carrying the wounded from the firing line, must immobilize fractures, using the soldier's equipment therefor, and must control abundant hemorrhage. The antiseptic packet dressing, carried by the soldiers or bearers, and its immediate application on the field, some regard as indispensable in modern warfare; but the author thinks it requires more than the average heroism for the soldier to dress his own wound, and to dress it for him, a disdain of life on the part of the bearer quite out of the ordinary. In practice the duty of the bearer is quite simple; he must transport to the dressing station as many wounded in as short a time and with as little discomfort as possible. The Regulations limit the work of the advanced dressing stations to the treatment of acute injuries, the control of hemorrhage, the relief of syncope, the fixation of fractures by temporary means (clothing, accoutrement, etc.), and the application of simple dressings. The chief aim of its personnel is to remove the wounded from the field of battle with all expedition, to apply the most elementary dressings to those who encumber the post, and to create order out of chaos by dividing the injured into transportable and untransportable, and sending the former to the rear. The regimental bearers bring the wounded from the field to the first dressing station; the musicians transfer those that are able to be moved to the ambulance bearers, and they are then carried by means of litters, ambulance wagons and other vehicles to the so-called ambulance—the next link in the chain of succor. This ambulance is established as near as possible to the reserve of the division, in a position to escape the oscillations of the battle, and at least 3000m from the artillery of the enemy and 1800m from the firing line. For them the surgeon-in-chief utilizes any adequate structure—houses, school-

houses, churches, etc., if they are easily evacuable, or a protected spot of ground hidden from the enemy. An abundant supply of water is necessary and easy communication with the post of succor. The Geneva flag by day and a white and a red light at night indicate their situation. The site for the ambulance being chosen, groups of assistants simultaneously clear up the space to be occupied, lay hands on all available tables, find straw (if there are not enough beds) and arrange it in bundles, with spaces between, along walls, prepare food and stimulants, boil water in large quantities for antiseptic purposes, and unpack and arrange instruments and dressings. To secure order in the midst of confusion, there are six places designated, three for the work of the surgeons, and three for the hospital accommodation of the wounded. In the first category there is a point chosen for the survey and distribution of the wounded arriving at the station; here the nature of their injuries is ascertained, their names with the number of their regiment and battalion are recorded, and they are directed either to the place where wounds are dressed or to that where operations are performed. After treatment, the injured are divided into three groups—the non-transportable, the transportable, and finally those who, after the battle, are to return to the colors. The surgeons are likewise separated into three groups—(a) those who receive and sort the wounded coming into the station, and put on simple dressings; (b) those who operate, and (c) those who apply complicated dressings and apparatus. The author describes in detail the duties of each group of surgeons. He places in the category of the non-transportable, the wounded who have received the following injuries: penetrating wounds of cavities (head, chest, abdomen), serious vertebral lesions, fractures of thigh and leg, perforating wounds of pelvis, penetrating wounds of large joints and those who are liable to secondary hemorrhage or syncope. The third division of the field sanitary service is the field hospital. It is intended to relieve the ambulance in the evening, or at least on the morning after the battle, to complete the work of the ambulance and to treat in proximity to the field those who are too severely injured to be carried any distance therefrom. The field hospital must have calm, security and fixity; it is a place where the injured are to receive methodical care, permanent dressings and applications, and where true surgical operations are to be performed. The Sanitary Service of the first line has, therefore, to occupy itself, first with the search for the wounded on the field of battle; second, the early application of antiseptic dressings, and third, the transport of the injured from the front to places of security and fixity in the rear. Delorme (E.) Chirurgie d'armée du fonctionnement technique du service de santé de première ligne; remarques et propositions. Bull. méd., Par., 1898, xii, 1.

Treatment of Infected Gun-Shot Wounds.—Koller.

In the summers of 1896 and 1897 the author, at the suggestion of Prof. Tavel, made in the Bacteriological Institute of Bern, a large number of experiments on rabbits, in order to ascertain what measures were likely to be followed by the best results in the treatment of wounds produced by infected bullets, and to learn if micro-organisms are forced into the tissues surrounding a wound canal, as is claimed to be the case by Müller. The animals experimented upon were divided into a number of series. In the first series, used to control the virulence and correct dosage of the micro-organisms employed, the wounds of entry and of exit were immediately closed by sutures and dressed in a manner to prevent secondary infection. In the 2nd., the wound canal was at once burnt out with the thermocautery and protected by occlusive dressings. In the 3rd., the channel made by the bullet was penciled with tinct. iodi fortior carried in on a sound, and the wound dressed in the same way as before. In the 4th., the wound was simply drained, a strip of iodoform gauze being pulled through and secured by a stitch. In the 5th., a glass drainage tube was laid in the canal, the wound of exit being closed with a con-

continuous silk suture. In the 6th., the track of the projectile was thoroughly disinfected with a 5 per cent sol. of carbolic acid, both openings being closed with a pad soaked in the same solution. Of those animals which recovered, the time required to get well was the same—about 30 days—in the series treated by glass drains, by gauze strips and in the control animals where no drainage had been employed. The wounds which were swabbed out with 5 per cent. carbolic acid solution showed but slight pathological changes, and abscesses, when they occurred, were small; while those treated with the cautery or tincture of iodine exhibited, a few days after the injury, marked inflammatory phenomena with the development of generalized abscesses. Morever, the general condition of the rabbits treated in the latter manner was by no means so good as when cabolic acid solutions were used, and they showed a more marked and more rapidly progressing emaciation. It is very natural to ask why the control animals, in which the wounds were immediately closed, and those in which simple drainage was employed, did well, while after thorough disinfection with carbolic acid, iodine or the cautery, serious results followed. It would be supposed that the more thorough the disinfection of the wound canal the less harm would result from the micro-organisms carried into the tissues by the bullet. But it must be remembered that these bacteria are not only deposited in the canal itself, but are forced into the neighboring tissues, and are in consequence not destroyed by disinfection of the wound canal however energetically it be carried out. On the contrary, the agents used to produce disinfection, diminish the vitality of the tissues surrounding the canal, and render them favorable media for the development of the germs of disease, forced into them by the pressure of the bullet in its passage. In simple drainage, however, no injury is caused to the structure of the part except that primarily produced by the bullet. And in the case of the control animals, where the wounds were immediately closed and the escape of all secretions cut off, the vitality of the tissues was not interfered with at all, and the isolation and distribution of the bacteria enabled them to be more easily overcome by the phagocytes. The author, in this connection, expresses his belief in the truth of Schwarzenbach's dictum, that the ease with which operative wounds are infected is due to the mechanical injury of the tissues incidental to the operation itself and especially to the contact of irritating antiseptic substances, and he maintains that a wound produced by sharp instruments and cleansed only with physiological salt solution, is far more likely to heal well and quickly than if sublimate or carbolic acid are used. The author believes that an infection through bullet wounds is always possible, since neither the heating of the shot nor the friction to which the bullet is subjected in its flight is sufficient to destroy bacteria adherent thereto. Still no germs may be implanted in the tissues at all, or, as more frequently happens, the organisms which are so implanted are too small in number, and what is of more importance, are of too slight a grade of virulence to produce infection. Occasionally, however, the number of bacteria so carried may be great and their virulence pronounced. The whole question of infection in this class of injuries depends, therefore, upon the number and virulence of the germs implanted in the tissues by the bullet; and although these may be so numerous and pathogenically active as to cause a fatal sepsis, yet of all forms of treatment simple drainage and the protection of the wound against secondary infection offers the best chances of a satisfactory result. Koller (H. F.) Experimentelle Versuch über die Therapie inficirtir Schusswunden. Deutsche Zeitschr. f. Chir., Leipz., 1898, xlvii, 211.

The Outlook for the Efficiency of the Sanitary Service of the German Army in a Future War.

(Continued from April number.)

In the battle of Columbey-Nouilly, as has been previously described, the wounded of the 1st. Prussian Army Corps were permitted to lie all night on the field, not because of the inefficiency of the Sanitary Service, but because of an avoidable error in the disposition there-

of. The Maneuvers of 1890 furnished another example of a technical and preventable defect in the administration of a well equipped and satisfactory sanitary department. On a certain day during these maneuvers, a Western Army marched to attack an Eastern Army, which, taking position on a plateau on the left shore of the Danube, there awaited decisive battle. A detached force of two army corps to the southward and separated from the main Eastern Army by the stream, were immediately summoned to join and reinforce it. The commander of the Western Army, learning of this anticipated movement, dispatched an army corps to the southeast to stop the two detached corps of the Eastern Army as far from the river as possible, and thus prevent the contemplated junction. But a division of the latter force was ordered to hold the detached corps of the Western Army in check, thus covering the passage of the river, until the remaining three divisions had crossed in safety and joined the Eastern Army, when it was to follow as rapidly as possible. To accomplish this it was necessary for the Eastern division left behind, to advance and secure possession of an elevated point, and the roads centering thereat, held by only one brigade of the Western Army corps, the other troops of that corps being in rear of this position and not within supporting distance. And, before these troops could come up, the Eastern division took the position by storm, drove the Western brigade out of it, and held it until the junction of their comrades of the remaining three detached divisions and the Eastern Army had been effected. The wounded of these four divisions of the Eastern Army had been collected at a place between the advanced position just captured and the main force, and, therefore, at a point directly in the line of retreat which the division, now holding the advanced position, must follow to rejoin the Eastern Army. The Sanitary Officer in command, however, ordered that the place be abandoned and the wounded be carried to the advanced position newly taken, and that a field hospital be established there. For many reasons this was an injudicious order; since the point selected had suffered severely from the previous artillery fire and was filled with wounded, abandoned by the brigade of the Western corps in its rapid retreat. In fact, the order was opposed to the whole condition of affairs and could not be carried out. The men of the advanced division had been directed to hold the place only until the contemplated junction had been effected, and then to retreat over the same road as their fellows had done. The wounded of the Eastern Army would thus have been left in the hands of the enemy when they reoccupied the place, or must be carried back over the ground just traversed, and in neither case would their lot have been an enviable one. As a matter of fact, immediately after the advanced position had been assailed and taken, all the transportable wounded should have been sent to the rear from the place where they had been collected, between the advanced position and the main force, and the non-transportable should have been left where they were, there being already at that point one field hospital and room for the establishment of another. Continuing, the writer expresses his belief that it is in the interest of the wounded that only those who are severely injured should be conducted or carried to the principal dressing station (established in the neighborhood of the severest fighting), while all those so slightly hurt as to be able to leave the firing line without assistance, should, before receiving medical attention, be sent to the rear. This suggestion of the writer's has been termed inhumane; but while in small combats or at points on the battle field where the fighting is not severe, all the wounded may receive assistance at the front, in the event of a serious and extended conflict, where the number of the wounded is large, this course is impossible, and one must choose the lesser of two evils and treat in the first line only the seriously injured and treat them thoroughly, while the slightly wounded, before receiving attention, are dispatched to the rear. The necessity of such a plan of action was demonstrated very clearly in the war of 1870-71, when, in severe engagements and at critical points, as many as 1000 wounded

accumulated at a principal dressing station, a number sufficient, if all were to receive succor, to paralyze the efficiency of the best organized sanitary corps. At Nouilly, at Gravellotte and at Vionville, the action began late in the day and it was not until the next day that the sanitary service was able to fulfill all of its duties to the wounded. So it will always be under the present condition of affairs; and in a future war it will be impossible to treat at the principal dressing station the wounded as fast as they arrive, and the station will be simply overwhelmed. As has been seen, difficulties of this kind were encountered in 1870-71 when the wounded comprised on the average 11.3 per cent. of the effective force; but in the next great war, the number of the injured cannot very well be much smaller, and may reach, according to the estimates of some authorities, 16.6 per cent. of the effective, while at critical points on the field, the average, whatever it be, will be surely exceeded. The author believes that the only way to remedy these difficulties, to prevent the principal dressing stations from being overcrowded and hampered in their efficiency and to enable the sanitary service to reach the full measure of its usefulness, is to prevent the slightly wounded from seeking or crowding the principal dressing station and send them at once to the rear, to one or more field hospitals especially established to meet this end. A course of action would surely not be inhumane which would give the surgeons an opportunity to render instant help to the severely injured, although such a plan occasioned some delay in the treatment of those with only trifling wounds. Eilert. Ibid., p. 39.

(To be continued.)

Militia Surgeons.

"The existing vacancies in the Medical Department of the Rhode Island Militia, the possibility of war with Spain, and a desire to see a change for the better in the laws governing the appointment of surgeons, is our excuse for calling attention to the antiquated custom which prevails in the selection of medical officers under existing laws. The surgeon-general is elected by the legislature. He in turn appoints—with the approval of the governor—an assistant surgeon-general. The brigade commander appoints a medical director, whose term of office is co-existent with his own. The regimental commanders each appoint a surgeon and assistant surgeon, whose commissions expire when the colonels retire. These appointments are purely personal and except for the fact that the appointees must be members of one or the other of the State Societies, no measures are taken to ascertain their fitness for the offices they fill. Fortunately for the State the present medical officers in the militia are good men, capable of performing any duty that may devolve upon them; but there is danger that future appointments may not be equally fortunate.

"To eliminate the personal element in these appointments, the medical department—as do the other departments in the militia—should conform as closely as possible with the regulations of the U. S. Army. There are no 'appointments' in the medical branch of the regular service. When a surgeon receives a commission from the Government, he does so by virtue of having passed successfully a most rigid and prolonged examination as to his fitness for the position he occupies; and the result is that the standard of excellence in the Medical Department of the U. S. Army is higher than that of any other army in the world. There is no reason why the same rule—perhaps, at first, not quite so extensively—should not govern in our State. Let the laws be changed so that commissions to medical officers will be issued upon a plan something like the following: When vacancies occur in the medical department, let the fact be published throughout the State that at a certain time and place, a board of examiners, consisting of the three senior medical officers of the brigade, will examine all candidates under 30 years of age who seek the appointment. The standard of excellence should be as high or higher than that adopted by the Rhode Island State Medical Society; and the candidate whose average is the highest should, of course, receive his commission, provided he is physically sound. His term of service should be for 3 years in each

grade and at the expiration of that time he should receive promotion, all promotions to be made by virtue of seniority of commission. That is to say, should there be a vacancy by death or resignation in, for example, the medical directorship, the senior surgeon should be promoted to that position, the senior assistant surgeon to be surgeon, and so on. By adopting a plan similar to the one suggested, the medical department of the militia would acquire greater dignity, there would be engendered among the young physicians of the State a healthy rivalry for appointment in the medical corps, and the efficiency of the service would be immeasurably increased.

"The lack of efficient surgeons and hospital arrangements during the first two years of the war of the rebellion cost thousands of lives. If in time of peace we should prepare for war by drilling men in the duties of a soldier, and by storing up arms and munitions of war, how much more important it is to have a competent corps of medical men to care for those who do the fighting. Without guns an army is helpless; without surgeons it could not exist."—Rutherford (J. C.) Atlantic Medical Weekly, Providence, 1898, ix, 171.

Dysentery on Field Service.

Surgeon-Major Fink says that dysentery is liable to occur in any individual at any time through errors in diet, fatigue, hardship and anxiety, especially in the case of those who are predisposed to malarial fever and scurvy and who are exposed to sudden and unusual strain in a climate showing extreme diurnal variations in temperature. He emphasizes the important parts played in the causation of this disease by malaria and impure water, and, speaking of the latter, insists that there is not the least doubt that filtration fails entirely in preventing the invasion of dysentery through this means. Boiling must be done to insure safety. He considers weak tea the best beverage on the line of march; and, after a severe strain, he believes that wine or beer are of service, in that they procure rest, improve appetite and do no harm, while spirits have no reviving power. What is wanted on the march is some beverage that will have a rapidly recuperating but no intoxicating effect. No disease, he continues, is so painful and trying to the soldier as dysentery, and to shake off an attack, he advises the following: Removal from area where contracted; rest of body and mind; diet (milk, chicken broth, soda and milk) and, finally, medicinal treatment. Under the last head, he advises sinapisms on the abdomen to relieve the griping pain, and then a dose of castor oil with brandy and hot milk or peppermint and hot water. After the bowels have moved freely, give a pill of one-half grain of opium and three grains of ipecac. The tendency to griping and the desire to go to stool after eating, may be relieved by the administration of 5 to 10 drops of chlorodyne. Fink calls attention to a native drug which is a demulcent and can be used with great advantage during an attack of dysentery. The drug or seed is known as "Tuphmulunga," a tablespoonful of which is put in a pint of cold water and allowed to stand one-half hour or more. The resultant pulpy mass is then beaten up and sugar and a trace of lime juice added. The drink has a cooling and soothing effect and can be used ad libitum. If the stools become frothy and mal-odorous, showing the absence of bile, the perchloride or biniodide of mercury may be administered. Quinine is likewise useful and also a Dovers powder at bed-time. In cases of dysentery the stools should be immediately disinfected—preferably with corrosive sublimate. In the field every precaution should be employed in the trench system, and after each evacuation, the fæces should be covered with earth or sand. Moreover, all abandoned latrines should be marked as a guide to those who follow. Such trenches should be 250 to 300 yards to leeward of the camp, and should be filled up when the camp is abandoned. For permanent camps, the author recommends Col. Rennick's incinerator, a cheap and efficient method of disposing of offal, night soil, etc. Fink (G. H.) Dysentery on field service. Indian M. Gaz., Calcutta, 1898, xxxiii, 16.

News Notes.

Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, U. S. Army, from March 2o, 1898, to April 19, 1898.

The retirement from active service by the President on April 10, 1898, of Lieutenant-Colonel David L. Huntington, Deputy Surgeon-General, by operation of law is announced.

Captain Francis A. Winter, Assistant Surgeon, is relieved from duty at the U. S. Military Academy, West Point, N. Y., and ordered to Jefferson Barracks, Missouri, for duty at that post.

So much of the order as directs Captain Paul Shillock, Assistant Surgeon, to proceed to Key West, Florida, and report to the commanding officer, 25th Infantry, is amended so as to direct him to proceed to Chickamauga National Park, and report to the commanding officer of that regiment for duty with the first detachment thereof that may proceed to take station at Fort Jefferson, Florida.

The order assigning 1st Lieutenant Bailey K. Ashford, Assistant Surgeon, to station at Fort Sam Houston, Texas, is revoked, and he is ordered to Fort St. Philip, Louisiana, for duty at that post.

Captain Joseph T. Clarke, Assistant Surgeon, is relieved from duty at Columbus Barracks, Ohio, and ordered to Madison Barracks, New York, for duty, relieving Captain Paul Shillock, Assistant Surgeon. Captain Shillock upon being so relieved will proceed to Key West, Florida, and report to the commanding officer, 25th Infantry for duty with that regiment.

The order assigning 1st Lieutenant George Rauchfuss, Assistant Surgeon, to Fort Apache, Arizona Territory, is revoked. Leave of absence for four months on surgeon's certificate of disability, to date from his arrival at the Army and Navy General Hospital, Hot Springs, Arkansas, is granted Major Henry McElderry, Surgeon.

1st Lieutenant George Rauchfuss, Assistant Surgeon, resigned April 2, 1898.

Captain Edward Everts, Assistant Surgeon, upon the abandonment of Whipple Barracks, Arizona Ty., is ordered to Fort Apache, Ariz. 1st Lieutenant Alexander S. Porter, Assistant Surgeon is relieved from duty at Whipple Barracks, Arizona, and upon expiration of his present leave of absence is ordered to San Diego Barracks, California, for duty.

The leave of absence on surgeon's certificate of disability granted Major Charles K. Winne, Surgeon, is further extended six months on surgeon's certificate of disability.

Captain Robert J. Gibson, Assistant Surgeon, is relieved from duty at Fort Thomas, Kentucky, and ordered to Fort Meade, South Dakota, for duty.

Major Louis W. Crampton, Surgeon, will be relieved from duty at Fort Meade, South Dakota, upon the arrival there of Captain Gibson, and is ordered to Fort McHenry, Md., to relieve Major Charles K. Winne, Surgeon.

Major Henry McElderry, Surgeon, now at Fort Leavenworth, Kansas, will proceed to Hot Springs, Arkansas, and report to the Commanding Officer of the Army and Navy General Hospital for treatment therein.

Major George H. Torney, Surgeon, will be relieved from duty at the U. S. Military Academy, West Point, N. Y., on or about June 1, 1898, and ordered to Fort Leavenworth, Kansas, for duty.

Major John M. Banister, Surgeon, will be relieved from duty at Fort Leavenworth, Kansas, upon the arrival there of Major Torney, and ordered to the U. S. Military Academy, West Point, N. Y., for duty.

The order assigning Major Egon A. Koerper, Surgeon, to duty as Chief Surgeon Department of the Platte, is revoked.

1st Lieutenant Charles Lynch, Assistant Surgeon, is relieved from duty at Fort Sheridan, Illinois, to take effect upon the completion of his examination for promotion, and ordered to Galveston, Texas, for duty.

Major Henry McElderry, Surgeon, is relieved from duty at Fort Leavenworth, Kansas, and will proceed to Omaha, Nebraska, and report in person to the Commanding General, Department of the Missouri, for assignment to duty as Chief Surgeon of that Department.

1st Lieutenant John H. Stone, Assistant Surgeon, is relieved from duty at Fort Riley, Kansas, and ordered to Fort Leavenworth, Kansas.

Captain Jefferson D. Poindexter, Assistant Surgeon, is relieved from duty at Willets Point, N. Y., and from temporary duty at Fort Hamilton N. Y., and ordered to report to Captain William C. Gorgas, Assistant Surgeon, for the purpose of assisting him in examining recruits in that city including the borough of Brooklyn.

Official List of Changes in the Medical Corps of the U. S. Navy from March 19th, 1898, to April 16th, 1898.

Surgeon L. G. Heneberger, detached from the Maine, and ordered home to wait orders.

Surgeon S. H. Griffith, detached from the Museum of Hygiene, Washington, and ordered to the Mayflower.

April 9—Passed Assistant Surgeon L. L. von Wedekind, detached from the Naval Academy, and ordered at once to the Minneapolis.

Passed Assistant Surgeon L. L. Spratling, detached from the Naval Hospital, Philadelphia, Pa., and ordered at once to the Columbia.

Assistant Surgeon H. H. Haas, detached from the Vermont, and ordered at once to the Texas.

Assistant Surgeon E. V. Armstrong, commissioned Assistant Surgeon from April 5.

Assistant Surgeon W. H. Bucher, commissioned Assistant Surgeon April 5.

April 12—Medical Inspector D. Dickerson, ordered to Marine Headquarters, Washington, D. C.

Surgeon D. N. Bertolette, detached from the Marine Headquarters, Washington, D. C., and ordered to the Vermont.

Surgeon W. H. Rush, ordered to the Dixie at once.

Surgeon J. M. Edgar, detached from the Vermont, and ordered to the Prairie.

Passed Assistant Surgeon J. M. Pickrell, detached from the Hospital, Washington, D. C., and ordered to the Yosemite.

Passed Assistant Surgeon A. M. D. McCormick,

detached from the Naval Academy, and ordered to the Yankee.

Passed Assistant Surgeon M. R. Pigott, ordered to the Naval Academy at once.

April 13—Surgeon L. G. Henneberger, ordered to the Bureau of Medicine and Surgery.

April 15—Medical Inspector M. C. Drennan, detached from the New York, and ordered home to wait orders.

Medical Inspector C. U. Gravatt, detached from the San Francisco, and ordered at once to the New York as Fleet Surgeon.

Surgeon A. C. Russell, detached from the Naval Museum of Hygiene, and ordered to the San Francisco at once.

Surgeon F. J. B. Cardeiro, detached from the Michigan, and ordered to the New Orleans at once.

Assistant Surgeon W. H. Bucher, ordered to the Vermont temporarily.

Assistant Surgeon E. V. Armstrong, ordered to the Scorpion.

Official List of the Changes of Station and Duties of Commissioned Officers of the U. S. Marine Hospital Service.

Murray, R. D., Surgeon.—To represent Service at Quarantine Conference at Atlanta, Ga., April 12, 1898.—April 7, 1898.

Austin, H. W., Surgeon.—Detailed for temporary duty in Bureau.—April 1, 1898.

Mead, F. W., Surgeon.—Granted leave of absence for 7 days.—March 30, 1898.

Carter, H. R., Surgeon.—To rejoin station at New Orleans, La.—March 31, 1898. To represent Service at quarantine conferences at New Orleans, La., April 8, 1898, and Atlanta, Ga., April 12, 1898.—April 5, 1898.

Peckham, C. T., Passed Assistant Surgeon.—Granted leave of absence for 29 days.—March 30, 1898.

White, J. H., Passed Assistant Surgeon.—To rejoin station at New York, N. Y.,—March 31, 1898.

Geddings, H. D., Passed Asssistant Surgeon.—To proceed to Tortugas Quarantine, and report to Medical Officer in Command for temporary duty.—April 2, 1898.

Wertenbaker, C. P.—When relieved by Assistant Surgeon Hill Hastings, to rejoin station at Wilmington, N. C.—April 2, 1898.

Young, G. B., Passed Assistant Surgeon.—To rejoin station at Delaware Breakwater Quarantine.—March 31, 1898.

Oakley, J. H., Passed Assistant Surgeon.—Upon expiration of leave of absence, to proceed to Evansville, Ind., and assume command of Service.—March 29, 1898.

Norman, Seaton, Assistant Surgeon.—Granted leave of absence for four days.—March 29, 1898.

Tabb, S. R., Assistant Surgeon.—Granted leave of absence for 7 days and upon expiration thereof to proceed to Savannah, Ga., and assume command of Service.—March 29, 1898.

Mathewson, H. S., Assistant Surgeon.—Granted leave of absence for 1 month from April 15, 1898.—March 30, 1898.

Jordan, W. M., Assistant Surgeon.—To proceed to San Francisco Quarantine, and report to Medical Officer in Command for temporary duty.—March 30, 1898.

Hastings, Hill, Assistant Surgeon.—To proceed to Middlesborough, Ky., for special temporary duty.—April 2, 1898.

Lavinder, C. H., Assistant Surgeon.—To proceed to Cape Charles Quarantine, and report to Medical Officer in Command for duty and assignment to quarters.—March 30, 1898.

Russell, H. C., Assistant Surgeon.—To proceed to Pittsburg, Pa., and assume temporary command of service.—March 30, 1898.

Board Convened.

Board convened to meet at Washington, D. C., April 5, 1898, for physical examination of Officer of Revenue Cutter Service.

Detail for the Board.

Surgeon H. W. Austin, Chairman, Passed Assistant Surgeon G. T. Vaughan, Recorder.

Casualty.

Assistant Surgeon Emil Prochazka died of tubercle of lungs at Silver City, N. Mex., April 1, 1898.

Sprague, E. K., Passed Assistant Surgeon.—Granted leave of absence for ten days from April 8th.—April 11, 1898.

Hastings, Hill, Assistant Surgeon.—Granted leave of absence for seven days upon being relieved from dutyat Middlesborough, Ky.—April 11, 1898.

National Guard of Pennsylvania—First Brigade.

First Lieut. and Assist. Surgeon John M. Bauman has been assigned to the 3d Infantry.

First Lieut. and Assist. Surgeon Geo. H. Halberstadt, attached to the 4th Infantry, has been promoted to Brigade Surgeon with the rank of Major, vice Major W. H. Eagle, resigned.

First Lieut. and Asst. Surgeon R. G. Le Cont has resigned from N. G. P.

Major W. H. Eagle, who resigned as Surgeon of the 3rd Brigade, has been connected with the Guard of Pennsylvania since Sept. 20, 1870.

The Hospital Corps of the First Brigade, which comprises the 1st, 2d, 3d and 6th Regiments, Infantry Battalion of the State Fencibles, City Troop and Battery "A," were inspected on April 6th, at the armory of the State Fencibles, by Brigade Commander John W. Scholl and Brigade Surgeon Joseph K. Weaver. The corps were first inspected as to the condition of pouches and clothing, followed by litter drill, application of bandages and first-aid dressings, improvised litters The corps showed considerable ability in the use of dressings and applications, especially when one takes into consideration the fact that the corps are made up of men who have served at least one year as musket men and litter-bearers, and who are engaged in business during the day.

Necrology.

The death is announced of Gottfried Lenhartz, M. D., Oberstabsarzt 1, kl. der Militär-Turnanstalt. Dr. Lenhartz died on Feb. 20, 1898, in his fiftieth year. In 1886 he became one of the editors of the Deutsche militärarztliche Zeitschrift, and continued his labors in connection with that journal, often in spite of weakness and suffering, up to the time of his death. He will be succeeded by Prof. Dr. Krocker, Oberstabsarzt 1. kl. and 1. Garnisonarzt in Berlin.

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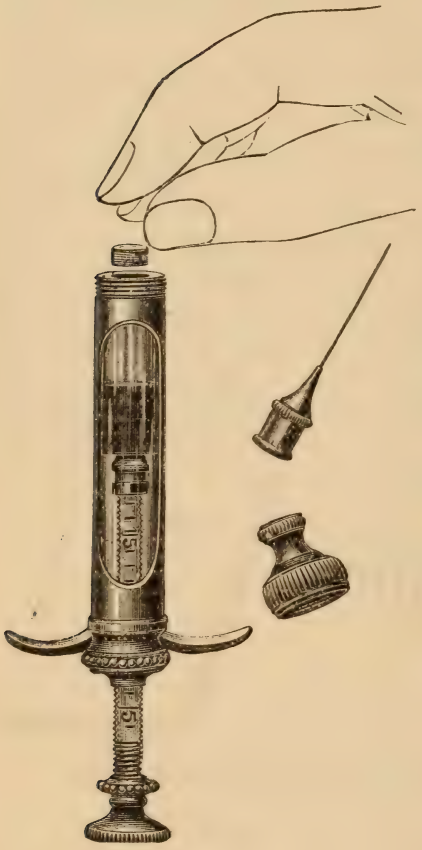

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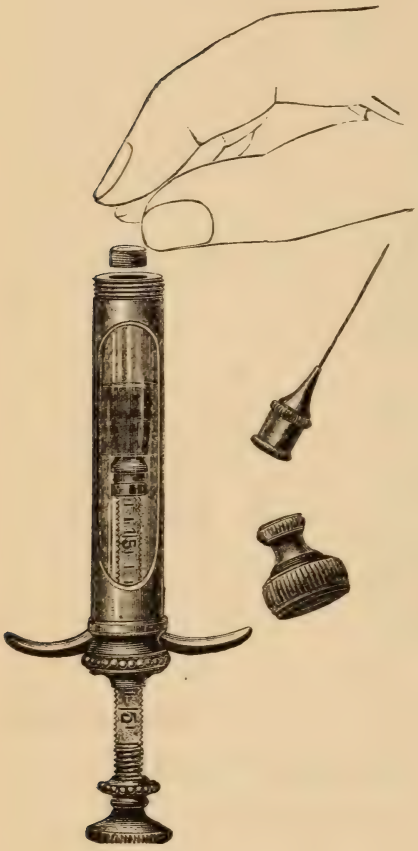

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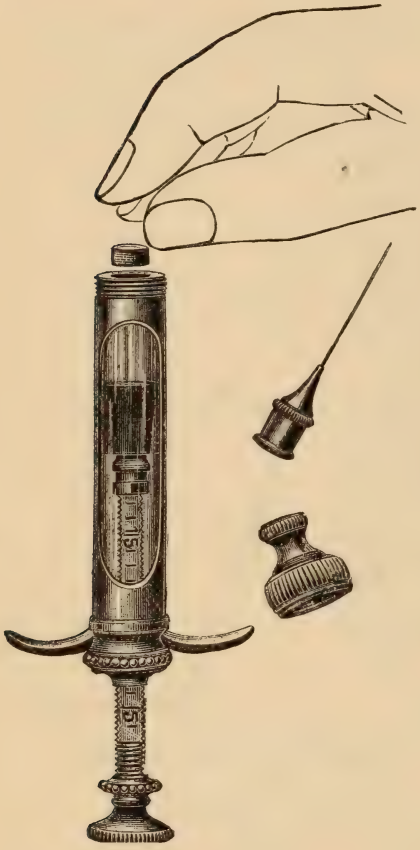

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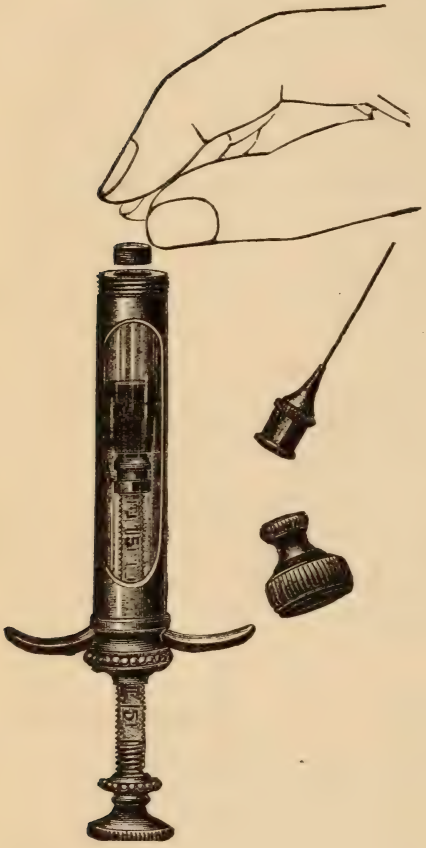

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SELECT MEDICAL OPINIONS.

Buffalo, N. Y., April 20, 1895.

I must say that I was more impressed with the way you introduce your Hypophos. Comp. than with the virtues of it, but "as the proof of the pudding is in chewing the string," I determined to give it a trial, and can firmly say that I am a convert to "McArthur."

Here is a case which has been the means of showing me that "McArthur's" is "in it."

Earl H., boy, Oct. 13, scrofulous makeup. Jan. 15, 1895, fell into tub of boiling water, both legs badly scalded. Skin and subcutaneous tissue wholly destroyed. Dressed antiseptically, and after sloughing had been completed, skin grafts tried—no effect. Glands in neck and groin greatly enlarged. Feb. 14, given Syr. Hypophos. Comp. and can say that boy's health has greatly improved; has gained in weight. Glands have reduced, and on March 17, when grafting was again tried, skin grew well, and to-day, April 20, there is only one spot, about the size of a silver dollar on the outer and middle third of leg, which will soon be covered. Evidently this case needed the lime and soda that were given him, and I shall continue to use it when occasion demands. Certainly, "one swallow does not make a summer," but it is pleasing to see that one in season. I would write a few more lines, but space is limited. Yours truly,

L. G. HANLEY, A. M., M. D.,
Med. Ex. Niagara University. Late Surgeon to Emergency and Sisters' Hospitals. Physician in charge of St John's Protectory, West Seneca, N. Y.

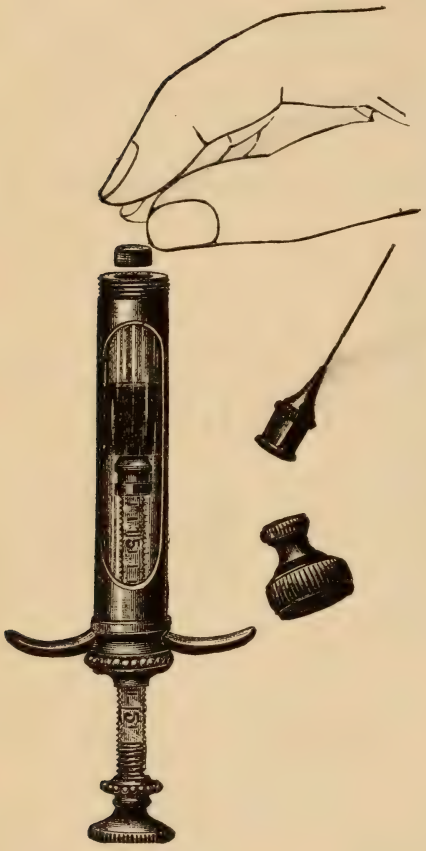
Russell, Iowa, Feb. 16, 1884.

Would be pleased to have one of your pamphlets, "Consumption and Tuberculosis." Am now using your Syrup Hypophos. Comp. with good results.

O. A. ELLIOTT, M. D.

Samples and Literature FREE. **The McArthur Hypophosphite Co., Boston, Mass.**

DROP
ONE



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than some tablets do in warm water.

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SELECT MEDICAL OPINIONS.

St. Louis, Mo., May 17, 1889.

I take pleasure in attesting to the quality and elegancy of preparation of the Syrup Hypophosphites, McArthur's. Have used it in my clinic and prefer it to others.

RODOLPHE T. ETAVARD, M. D.
Clinical Adjunct to the Chair of the Practice of Medicine in the St. Louis College of Physicians and Surgeons.

Newbern, Ala., Jan. 17, 1887.

I have received your pamphlet. I frequently prescribe your Syrup of the Hypophosphites, and am very much pleased with it. Very truly,

J. HUGGINS, M. D.

Baltimore, March 22, 1881.

I take this occasion to say that I used the Syrup of Hypophosphites, you were kind enough to furnish me for trial. In suitable cases in the City Hospital, both in the in and out patients' departments, and in all cases with very decided benefit. In every case emaciation was arrested, and in some there was a decided gain of flesh and strength, with a corresponding improvement in the cough and other symptoms.

I now prescribe it habitually in my private practice, and always with benefit when the cases are properly selected. Of course, when patients come to me with cavities already formed, and other points ready to soften and break down in a state of extreme emaciation, and suffering from pronounced hectic, I do not prescribe your syrup with any expectation of permanent benefit. But even in these cases, I think the patient's condition is improved, waste is retarded and life thus prolonged.

I am your most obliged and obedient servant, JOHN S. LYNCH, M. D.

Professor Principles and Practices of Medicine, and Clinical Professor of Heart, Throat and Lungs, in College of Physicians and Surgeons.

Samples and Literature FREE. **The McArthur Hypophosphite Co., Boston, Mass.**

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AND ATONIC DYSPEPSIA.

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SELECT MEDICAL OPINIONS.

Boston, Sept. 18, 1883.

Having just returned from my summer vacation in western New York, I want to let you hear of the good results of your Hypophosphites in two widely differing cases there :

W. M., a boy 4 years old, of spare, nervous build, who two years ago had frequently epileptiform convulsions of a grave degree of violence. His parents are healthy Americans, having plenty, and comforts of all kinds otherwise. He is now free of all convulsions, and has been so for some four months or more. The treatment was a tablespoonful of the Hypophos. McArthur in his milk at breakfast, simply.

The other case is that of Mrs. R., an American domestic in the Gerritt Smith mansion. She is a widow about 50 years of age, and a year ago gave the following signs and symptoms : hectic, emaciation, weakness, anorexia, dyspnoea, dysmenorrhoea, haemoptysis, with all signs of cavity at base of left back, plenty of rales. She now has little or no hectic, good pulse, good strength, fair appetite, has passed comfortably the change in life, has better weight, no rales to speak of, and the cavity is smaller, evidently closing up, not tending to extend, very few haemoptyses, for three months past, and these traced to overwork at the times. The treatment as in the former case, only double the quantity. She is a sensible, but somewhot set, person, but in regard to her health she admits that she has no idea now of "giving up," as she did prior to treatment begun so well.

JOHN DIXWELL, M. D.

Amherst, Mass., July 12, 1897.

I have used Dr. McArthur's Syr. Hypophos. Comp. for many years, and am still using it. I am again giving it a test in a case of tuberculous laryngitis.

C. F. BRANCH, M. D.

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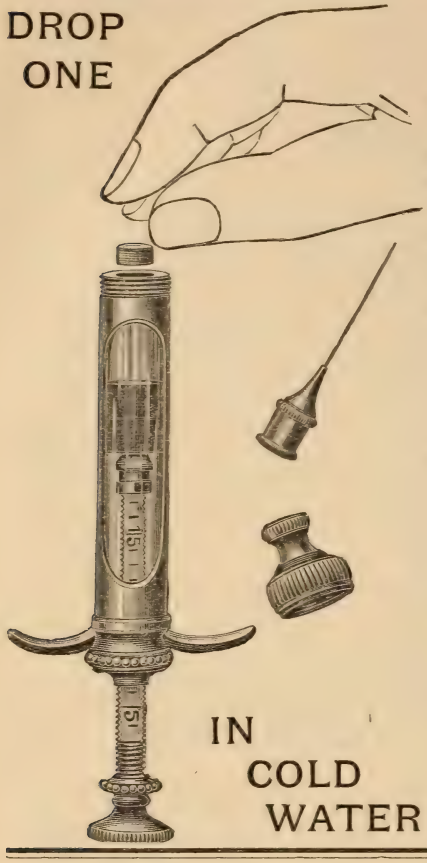

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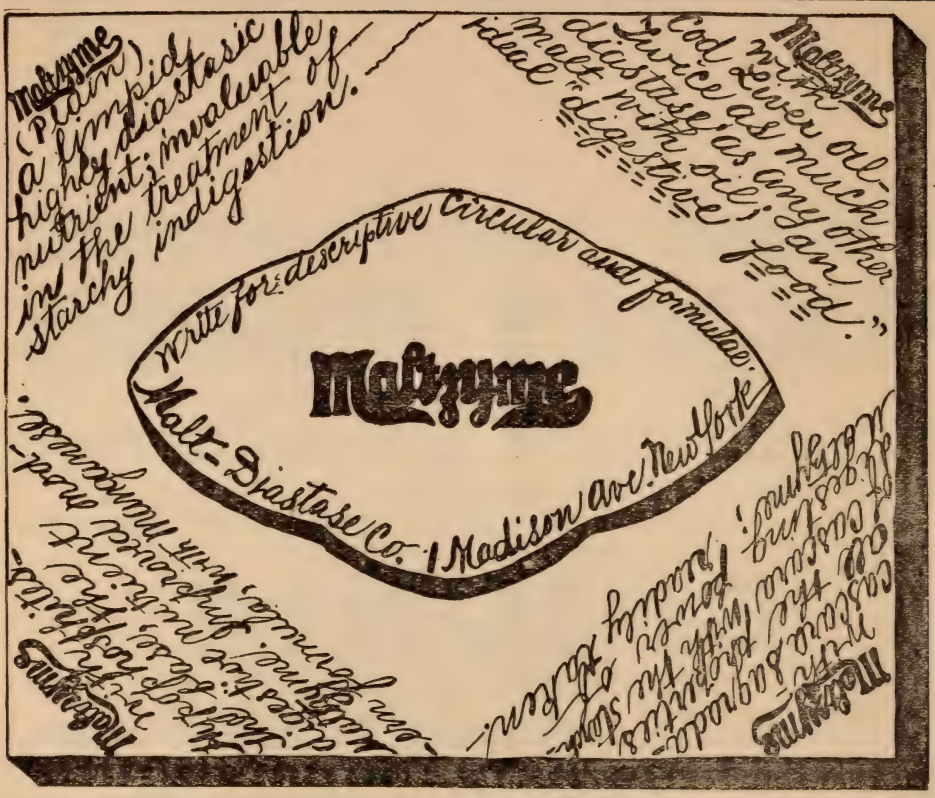

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